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MARCH

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THE UNIJUNCTION TRANSISTOR

ROGER L. HARRISON,* VK3ZRY

PERHAPS you have seen this rather unusual name in overseas (and some local) technical journals. Perhaps you have seen an odd-looking symbol (see Fig. 1) in a circuit in the very same technical journals. Perhaps you have wondered what this little device does—with its symbol that vaguely resembles that of a conventional transistor—but behaves much differently. The thing looks (and behaves?) like some weird paradox—it has an emitter in the wrong place and two (yes two!) bases—which, incidentally, gives us its other name—the **double base diode**—which tends to confuse matters even further.

Well, what is this little device and what can you do with it?

The unijunction transistor (hereinafter referred to as U.J.T.) is a semiconductor device possessing quite unusual electrical characteristics. Its construction and operation is markedly different to the conventional two-junction transistor.

CHARACTERISTICS

Fig. 1 shows its symbol and the conventions for current flow in the device. Fig. 2 shows a simplified equivalent circuit. Now, referring to Fig. 2, R_{B2} and R_{B1} represents the resistance between B2 and B1. This is known as the interbase resistance, R_{BB} , and is generally in the range 4K to 12K ohms. This is the resistance of a bar of N-type silicon with two contacts at either end. Now another contact of P-type material is placed somewhere between B2 and B1 on the N-type silicon bar and this forms a rectifying or diode contact called the emitter (E).

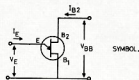


FIG. 1.

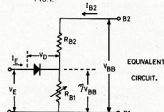


FIG. 2.

INTRINSIC STANDOFF RATIO

If a variable potential is connected between B2 and B1 with the positive on B2 and negative on B1 (E not connected) the device acts just like a voltage divider and a certain fraction, η , will appear at the emitter (E). This fraction

(η) is called "the **intrinsic standoff ratio**". The ratio is approximately 0.5 to 0.8 for all types of U.J.T.s. Mathematically, the following equation will accurately define η .

$$\eta = \frac{R_{B1}}{R_{B1} + R_{B2}}$$

PEAK POINT EMITTER VOLTAGE

If the emitter voltage, V_E , is less than ηV_{BB} the emitter diode is reverse biased and only a small leakage current will flow. As V_E is raised towards ηV_{BB} and just above, emitter current will flow as the emitter diode becomes forward biased. The result is that R_{B1} will suddenly decrease its resistance. Consequently I_E will suddenly increase and V_E will drop.

The point at which R_{B1} suddenly decreases is called the "**peak point**" and the emitter voltage at this point is called the "**peak point emitter voltage**" and is labelled V_P .

The diagram in Fig. 3 illustrates the peak point and V_P a little more clearly. These are the static emitter characteristics and you will note that V_P is dependent on V_{BB} (the interbase voltage). The lower curve ($I_{B2} = 0$) is the emitter to B1 diode curve when B2 is disconnected.

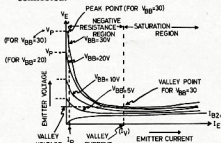


FIG. 3.

These curves can be plotted for any U.J.T. by breadboarding the circuit in Fig. 4. Set V_{BB} to convenient voltages in 5v. or 10v. steps, and for each setting of V_{BB} vary the emitter pot. to find V_P first (sudden increase in I_E) and then vary I_E in suitable steps (about 1 or 2 mA. steps), reading V_E at each step. You can then plot the static interbase characteristics like that in Fig. 3. Disconnecting B2 will allow you to plot the curve for $I_{B2} = 0$.

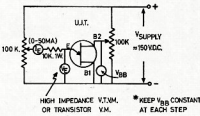


FIG. 4.

From these curves an approximation to η can be calculated very easily. Simply divide V_P (for a certain value of V_{BB}) for that curve. For example, take the topmost curve—

Now $V_{BB} = 30v.$, let's say $V_P = 16$ volts, at this point $\eta = V_P / V_{BB} = 16 / 30 = 0.534$.

To be more accurate at lower values of V_{BB} , use the equation—

$$\eta = \frac{V_P - V_D}{V_{BB}}$$

where V_D = emitter diode voltage, = 0.6 volts.

PEAK POINT CURRENT

This is marked as I_P in Fig. 3. I_P is the minimum current necessary to trigger the U.J.T. It can be measured using Fig. 4 with some changes. Disconnect the meter (v.t.v.m., etc.) reading V_E . Replace the meter reading I_E (0-50 mA.) with a 0-50 μA . meter. At each setting of V_{BB} , slowly increase the emitter potentiometer until the meter jumps suddenly. The point just before the jump in emitter current is the value of I_P .

VALLEY VOLTAGE

This is marked as V_V on Fig. 3. It is the emitter voltage at the valley point. V_V increases with increase in V_{BB} you may notice.

VALLEY CURRENT

This is marked as I_V on Fig. 3. It is the value of emitter current at the valley point, this also increases with increase in V_{BB} .

STATIC INTERBASE CHARACTERISTICS

These characteristics are a series of curves that relate V_{BB} and I_{B2} . They can be plotted by breadboarding the circuit in Fig. 5. With the emitter disconnected at first, a reading of I_{B2} for every step in V_{BB} is taken. The steps in V_{BB} should be at 5v. intervals. Then, connecting the emitter, increase the emitter pot. until the U.J.T. fires and set I_E at 5 mA. or 10 mA. and, keeping this constant, take readings of I_{B2} at every step in V_{BB} .

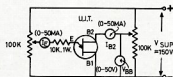


FIG. 5.

Take another set of readings for I_E at say 10 or 15 mA. Continue this for steps of I_E at 5 or 10 mA. intervals, stopping at $I_E = 50$ mA. or so. Plotting the results will give a set of curves like those in Fig. 6.

* 1 Mary Street, North Dalwyn, N.S.W., 2104.

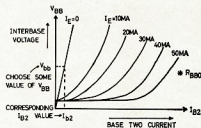


FIG. 6.

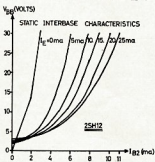
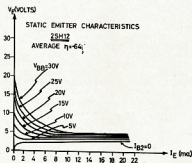


FIG. 6a & 6b.

A set of curves (Figs. 6a and 6b) was plotted, using the above methods, for a type 25H12 UJT.

CONSTRUCTION

The UJT is constructed in two basic forms known as the bar and cube structures. Most UJT types are of the bar construction form.

The bar construction is shown in Fig. 7. A small bar of silicon has two ohmic contacts (not junctions) unplanted at opposite ends of the bar. A junction (the emitter) is implanted on the opposite side of the bar between B1 and B2. This junction is somewhat closer to B1 than B2. The unit is generally mounted on a ceramic disc inside

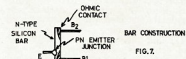


FIG. 7.

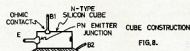


FIG. 8.

a TO-5 or TO-18 case and all leads are electrically isolated from the case.

The cube construction is shown in Fig. 8. The cube of N-type silicon is mounted on its base-two contact and the base-one contact is a thin wire alloyed into the top of the cube. The emitter is alloyed into the side of the cube and a PN junction formed. This type of construction is usually mounted in a TO-18 package.

This type of construction gives different characteristics to the bar type. Owing to the small contact area and shape of B1 a higher intrinsic standoff ratio (η) can be achieved with much smaller spacing between E and B1. This produces a lower I_E , short turn-on time, lower valley voltage, and permits operation at reduced voltages. Unfortunately cost is generally higher. Fig. 9(a) and 9(b) illustrates the different static emitter characteristics of typical bar and cube structure UJTs.

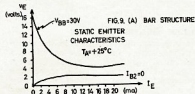


FIG. 9(A) BAR STRUCTURE

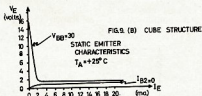


FIG. 9(B) CUBE STRUCTURE

UJT CIRCUITS

Seeing as most types of available UJTs are of the bar construction type, I will only consider these in the following discussion.

BIAS CIRCUITS

The various parameters and characteristics of a UJT are subject to temperature variation; some more so than others. Now V_F will vary with temperature and is principally due to variation in V_0 (see Fig. 2). This effect is usually compensated for by a resistor (R_2) in Fig. 10. As the temperature increases, so will R_{20} ; V_{F0} will increase owing to the voltage divider action of R_2 , R_{20} and R_1 .



FIG. 10.

The resistor R_2 can be chosen from the following equation:—

$$R_2 \approx \frac{R_{20}}{2 \eta V_1} \quad (\text{for } R_{20} \text{ see Fig. 6})$$

This equation is only approximate and some juggling of R_2 might improve the compensation, but generally it will be close enough for a wide range of UJTs. Also, for the circuit in Fig. 10, V_F is given by: $V_F = \eta V_1$.

The resistor R_1 should generally be kept below 100 ohms as it controls the valley voltage (V_V) and valley current (I_V) (see Fig. 3). Use what you have on hand (33 ohms or 47 ohms usually work okay).

RELAXATION OSCILLATORS

The relaxation oscillator shown in Fig. 11 can be used for many applications. For example, tone oscillator, timing circuit, pulse generator, sawtooth generator or a trigger circuit.

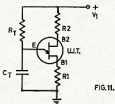


FIG. 11.

When V_1 is applied C_T appears as a short circuit and thus E is reverse biased and does not conduct. As C_T charges through R_T the emitter voltage rises exponentially towards V_1 . When the voltage reaches V_F the emitter suddenly conducts and C_T discharges through E and B1 via R_1 . The emitter then ceases conducting and the whole process begins again. The waveform produced is shown in Fig. 12.

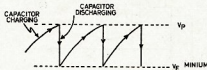


FIG. 12.

The approximate frequency of oscillation is given by:—

$$f \text{ (c.p.s.)} \approx \frac{1}{R_T C_T L_n \left(\frac{1}{1-\eta} \right)}$$

The equation holds providing R_1 and R_2 are small, i.e. $R_1 < 100$ ohms, and R_2 from previous equation but less than 1,000 ohms.

To save calculation in many instances a nomograph (Fig. 13) will assist in the design of a relaxation oscillator using a UJT.

Two frequency scales have been given. One for a value of $\eta = 0.55$ and another for a value of $\eta = 0.65$. Use the scale appropriate to the value of η for the UJT you are going to use. An example for a practical circuit is given later.

A WIDE RANGE RELAXATION OSCILLATOR

The circuit in Fig. 14(a) shows a practical circuit built and tested by the author. I used a Japanese UJT, the NEC-25H12. It performed very well,

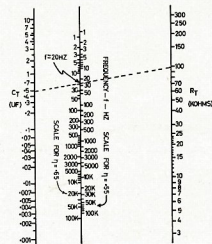


FIG. 13. FREQUENCY NOMOGRAPH

high output impedance of the circuit to maintain a relatively constant charging current for the timing capacitor C_T .

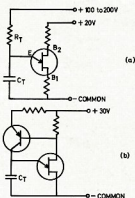


FIG. 15.

PULSE GENERATORS

A current pulse will flow in the emitter, base-one, and base-two circuits each time the emitter conducts in a relaxation oscillator. Thus, a relaxation oscillator can be used as a very efficient pulse generator giving either positive or negative output pulses at various impedance levels. Several circuit configurations are shown in Figs. 16(a), (b) and (c).

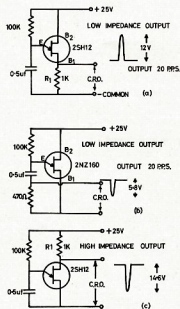


FIG. 16.

* SEE FIG. 13 TO OBTAIN VALUES OF R_T AND C_T IN ABOVE CIRCUITS

The output pulse from these circuits has a relatively fast rise time and quite a slow fall time compared with the length of the pulse. A significant improvement in this state of affairs can be made by using an inductance in the

B1 circuit. A transistor can be used to invert the output pulse (see Fig. 17).

The approximate inductance can be found from $L = 0.4t^2 \div C_T$, where C_T is the desired pulse width. The answer will be in Henries.

A pulse generator can be designed by using the nomograph of Fig. 13 and picking the circuit configuration you desire from Fig. 16.

The resistor R1 shown in the circuits (a), (b) and (c) of Fig. 16 can be chosen by the "um-now-let-me-see-what-have-I-got" method. Juggle its value and the supply voltage to obtain the output voltage you want.

For more critical applications the circuit in Fig. 17 can be used. The width of the pulse is determined by the inductance in the emitter (L). The frequency of the pulses (or number of pulses per second) is determined by R_T and C_T . The rise and fall times will be quite short, typically one-twentieth to one-fiftieth of the pulse width "t".

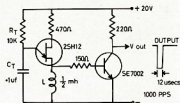
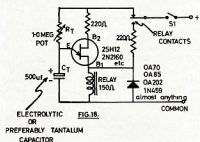


FIG. 17.

U.J.T. TIMERS

A timer can be designed using the relaxation oscillator principle. Referring to Fig. 18, when S1 is closed, C_T charges to the peak point voltage at which time the U.J.T. "fires" and the capacitor C_T discharges through the relay which promptly closes. One set of (changeover) contacts holds the relay closed and removes the supply from the U.J.T. Opening S1 returns the circuit to its original condition. This circuit is useful for periods up to 15 or 20 seconds.



The best way to design a circuit like this is to haywire it together and juggle R_T and C_T until you achieve the desired result.

I found this method reasonably fast and calibrating the pot. is quite easy. Note that the relay should be physically small so that it has low operating power. A huge 600 or 3000 type relay just won't work (I tried).

Have a look in the G.E. Transistor Manual for more timer circuits.

(Continued on Page 15)

the frequency range being 500 to 1. I inspected the waveforms with a Hewlett-Packard c.r.o. and the results are shown in Fig. 14(b) and 14(c). The circuit would not oscillate below 1 Kc. as the timing resistance R_T was too great to allow the emitter to "fire". The frequency is easily lowered by increasing C_T .

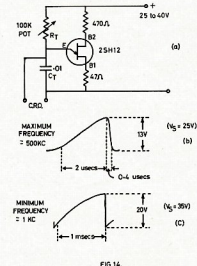


FIG. 14.

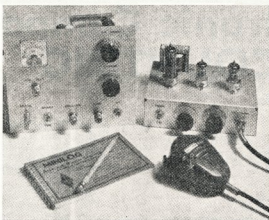
This circuit has a great potential for the sweep generator in a c.r.o., r.f. sweep generator or panaroscope. Unfortunately the output has a non-linear rise as can be seen in Fig. 14(b) and (c). This can be overcome in two ways. Fig. 15(a) shows R_T returned to a higher voltage supply. This is okay and gives reasonable linearity providing a higher voltage supply is available. It suffers from a disadvantage though—thefrequency is not as stable as it would be with a single supply.

In Fig. 15(b) a transistor, connected in a common base circuit, uses the

"Das Soften- boomer 160"

A LOW COST RIG
FOR 160 METRES

DOUG DE MAW, WICER



• Here's a straightforward 160 meter transmitter that will make possible many hours of enjoyable hamming, at moderate cost, on the "top band". Why not make that long-promised debut on 160 now?

If you haven't tried 160, you've missed an interesting facet of Ham Radio. Since high power operation is not permitted on 160, the little rig described here will hold its own while competing with like-power stations across the country.

[In Australia, 150 watts input to the final is permitted on 160 metres. Also the Amateur Service is the secondary service in this band of 1800-1860 Kc.—Ed. "A.R."]

The 160 metre band offers the DX man who likes to do things the hard way a proving-ground for his operating skill and perseverance. Ground wave coverage on 160 is excellent, making it a useful band for ragchewing and mobile work. Signals in the 1.8 to 2.0 Mc. region are not seriously affected by land masses, such as hills and mountains. A few watts of power will do a creditable job of spanning the continent, provided an effective antenna system is used. All of these features contribute to making the band interesting and useful.

"Das Softenboomer 160" will run 50 watts on c.w. and 30 watts on a.m. In areas where higher power levels are permitted it can be used to excite a linear amplifier.

The power supply can be made from salvaged components taken from a junked t.v. set, making the overall cost of the transmitter a bit more attractive than it would be if new parts were used. Since the balance of the components are readily available from most supply houses, procurement should be no problem to anyone wishing to build the little rig.

THE R.F. CIRCUIT

Two tubes are used in the r.f. section of the transmitter. A 6CL6 serves as

the crystal-controlled oscillator and the p.a. stage uses a 6HF5 t.v. sweep tube. The 6HF5 was chosen because of its high plate dissipation rating, high permeance, and low screen voltage requirement. These features make it ideal for operation at low plate voltage where moderate power output is desired.

Constant-carrier screen grid modulation is used for a.m. operation. Because the 6HF5 screen grid operates at

low voltage, 100% modulation requires but little audio power from the modulator. For a.m. operation the unmodulated screen voltage is about 75 volts. When operating c.w., 150 volts is supplied to the 6HF5 screen circuit.

Output from the oscillator, Fig. 1, is varied by the drive control, R1. An r.f. choke, RFC2, is used in the plate circuit of the 6CL6. The p.a. grid circuit hookup, C1L1, makes possible the inclusion of C2, the neutralising capacitor. Although the transmitter did not show any outward signs of instability without neutralisation, considerable r.f. feedthrough was apparent in the p.a. stage when the plate and screen voltages were removed with drive applied. This problem was resolved by the addition of the neutralising network, C2, RFC3, and the 0.001 uF. capacitor, at the junction of L1 and RFC3.

The output tank, C3/L2/C5, is a pi network designed to work into a 50 ohm load. There is sufficient flexibility in its tuning range to permit it to match nonreactive loads between 30 and 75 ohms. If other impedances are to be dealt with, a transmatch should be used between J1 and the load.

Both stages of the transmitter are keyed for c.w. A 2 uF. capacitor is used between the keying bus and ground to provide a shaped keying characteristic. The c.w. note is clean and chirp-free when active crystals are used at Y1.

Grid and plate current metering of the amplifier is made possible by meas-

1 Amplitude Modulation Methods, The Radio Amateur's Handbook, chapter 8.

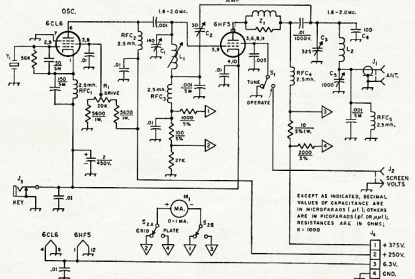


Fig. 1.—Schematic diagram of the r.f. unit. Fixed resistors are 1/2 watt composition unless otherwise noted. Capacitors are disc ceramic except those marked SM, which are silver mica. Capacitors bearing polarity marking are electrolytic and are in uF.

- C1—140 pF. miniature variable.
- C2—30 pF. miniature variable.
- C3—325 pF. variable.
- C4—100 pF. 1,000 volt mica.
- C5—Three-section broadcast variable, all sections in parallel. Remove trimmer capacitors from slide.
- J1—Co-ex. receptacle, type SO-239.
- J2—Phono connector.
- J3—Closed-circuit phone jack.
- J4—Four-pin male chassis connector.
- L1—27.5-58.0 uH. variable inductor.
- L2—Coil stock, 4 inches long, 1 1/4 inch diam., 16 turns per inch.

- M1—0.1 milliammeter.
- R1—20,000 ohm wire-wound control, linear taper, 2 watts.
- RFC1 to RFC3 inc.—2.5 mH, 125 mA. choke.
- RFC4—2.5 mH, 375 mA. choke.
- RFC5—Same as RFC1.
- S1—S.p.s.t. toggle switch.
- S2—Ceramic rotary, 1 section, 2 poles, 2 positions, non-shorting.
- Y1—1.8 Mc. crystal.
- Z1—Parasitic suppressor, 7 turns No. 20 enamel wire wound on 56 ohm 1 watt resistor (coil soldered to resistor pigtales).

* Reprinted from "QST," August 1966.



Electronic Components for COUNTING



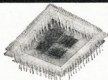
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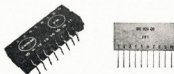
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Single plane matrices for low cost data storage. Lithium nickel ferrite cores permit operation over a wide temperature range. Available in various configurations for most applications. Complete range of miniature matrix stacks up to a capacity of 16,384 50-bit words.



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A wide range of devices is available to suit most applications. Special quality characteristics ensure reliability and long life. Most indicator tubes can be obtained with a tinted filter for use under unfavourable ambient light conditions.



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Mullard Norbit 2 includes sub-assemblies capable of solving industrial control problems using well established solid state techniques. Silicon semiconductors are used throughout so that an operating temperature range of from -10° C to 85° C is guaranteed, with speeds of up to 10 Kc/s. Each circuit block is a ready-made electronic sub-assembly designed to perform one of the basic functions in digital equipment. The range of circuit blocks includes pulse shapers, gate circuits, flip-flops, amplifiers, etc., to meet the requirements of digital systems engineers.



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using the voltage drops across a 100 ohm resistor in the grid circuit and a 10 ohm resistor in the plate supply line. A 1 mA. meter is used for this purpose, and is switched for grid and plate monitoring by a d.p.d.t. switch, S2. Reasonable accuracy is assured by the use of 5% resistors. Greater accuracy, at higher cost, would result from the use of 1% resistors.

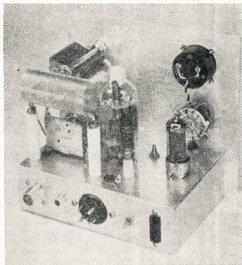


Fig. 2—Top-rear view of the r.f. assembly. Antenna connector is at left on chassis apron and next to the phono connector for screen voltage input. Power receptacle is at centre with ground post to the right. The four-conductor socket at the far right is not used and was installed for future experiments with v.f.o. operation.

MODULATOR CIRCUIT

Three tubes are used in the screen modulator assembly, Fig. 4. The microphone voltage is amplified by V1A, passed on to V1B for further amplification, and then applied to the speech clipper where the positive and negative peaks of the audio signal are clipped by CR1 and CR2. The amount of clipping is determined by the setting of R2. Since CR1 and CR2 are 3.6 volt Zener diodes, clipping will not take place until the peak audio level reaches 3.6 volts. By connecting the diodes back-to-back, both positive and negative peaks are clipped. The clipper is followed by a filter which prevents high frequency audio harmonics from being passed on to the last two stages of the modulator. The harmonics are generated in clipping and would cause the transmitted signal to be broad and distorted were they not filtered out.

Output from the filter goes to R3, which serves as the modulator gain control. A 6C4 is used as a third audio amplifier and is necessary to compensate for the insertion loss through the clipper network. A negative feedback network is used between the plate of the 6C4 and the plate of the 6CM6 modulator tube. The feedback voltage is taken from the junction of two 27,000 ohm resistors which are bridged across one half of the primary winding of T1. The plate load resistor for the 6C4 is returned to this point to permit part of the audio voltage from the primary of T1 to be fed back to the grid of the 6CM6.

Since the modulator is looking into the nonlinear resistance of the p.a.

screen circuit, it is necessary for the internal impedance of the modulator to be low, to minimise distortion. The plate resistance of the 6CM6 is lowered through the use of negative feedback, and the end result is a cleaner a.m. signal.

Transformer T1 is a push-pull 5w. output transformer. Connected as shown in Fig. 4, it provides a 1:1 im-

pedance ratio between the modulator and the screen grid of the p.a. stage. The voice coil winding is not used. A 30K resistor is connected between T1 and the screen grid of the 6HF5 to drop the screen potential to 75 volts during a.m. operation. A 2 uF. capacitor is in parallel with the resistor to by-pass the audio around the resistor.

CONSTRUCTION

The r.f. and modulator assemblies are built on 2" x 5" x 7" aluminium chassis bases. Separate chassis were used so either unit could be used independently when experimenting with r.f. units or modulators of different design. There is no reason why the entire transmitter, including the power supply, cannot be built on a single chassis if one-piece construction is desired.

Shielded audio cable is used in the modulator filament circuit to help reduce hum pickup. The same method is used in the r.f. chassis to reduce stray coupling between the stages.

The panel for the r.f. unit was made from a piece of 1/16" aluminium plate, 7" high by 8" wide. Each chassis is enclosed by attaching a 5" x 7" aluminium bottom plate to it after final check-out. The bottom plates are held in place with No. 6 sheet-metal screws. Each plate is equipped with rubber feet to prevent damaging the surface of the operating table.

The power supply, Fig. 6, is of conventional design and the layout can be anything you please.

TUNING UP

After the interconnecting cables between the units have been attached, connect a 50 ohm dummy load or 60 watt light bulb to J1. Place the transmitter panel switch, S1, in the "tune" position. Apply power and, while observing the grid current meter, adjust C1 for peak indication. Next, adjust the drive control, R1, for a reading of 3 mA. (full-scale meter deflection in the grid current position is 10 mA.). The amplifier can now be turned on by

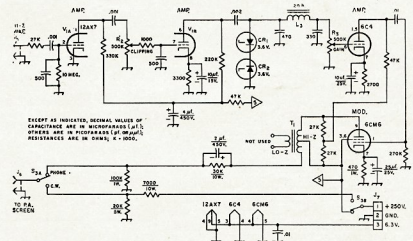


Fig. 4—Schematic diagram of the modulator. Resistors are 1/2 watt composition unless otherwise noted. Capacitors are disc ceramic except those bearing polarity marking which are electrolytic.

- CR1, CR2—3.6 volt Zener diodes (1N477 or equiv.).
- J5—Two-terminal microphone connector.
- J6—Phono connector.
- J7—Three-terminal connector.
- L3—20 H. 15 mA. choke.

- R2—0.5 megohm audio-taper control.
- R3—0.5 megohm audio-taper control.
- S3—D.p.d.t. toggle switch.
- T1—10,000 ohm c.t. output transformer, 5 watts; voice coil winding not used.

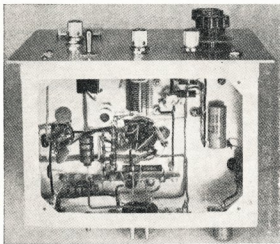


Fig. 3—Bottom view of the transmitter. Amplifier grid tuning circuit is at the centre with the neutralising capacitor to the right of C1. The oscillator section is at the left of the chassis.

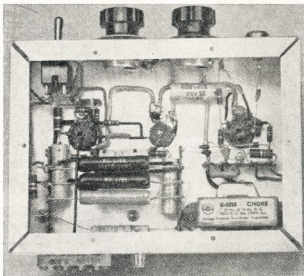


Fig. 5—Under-chassis view of the modulator assembly. The 12AX7 is at the right, the 6C4 is at the centre, and the 6CM6 is at the left. Shielded wire is used for the filament circuit.

throwing S1 to the "operate" position. With S2 in the plate-current position, quickly tune C3 for a dip in plate current. Normal loaded plate current for a.m. operation will be approximately 100 mA. For c.w. use, the p.a. plate current at maximum output will be about 150 mA. at resonance (full-scale deflection in plate current meter position is 200 mA.).

After tune-up is completed, remove the plate and screen voltage from the 6HF5 by unsoldering the plate supply lead and grounding S1. Connect an oscilloscope or diode r.f. indicator² to the antenna end of L2 through a 50 pF. capacitor. With the dummy load still connected to J1, apply drive to the amplifier and adjust the neutralising capacitor, C2, for minimum r.f. signal as seen on the diode detector's indicating meter. An insulated screwdriver will be required for adjustment of C2. The null in output will be quite sharp when the proper setting of C2 is reached.

If an oscilloscope is used, leave it connected to the output of the transmitter, place the modulator switch in the phone position, and operate the transmitter into the dummy load. Make certain that the amplifier is loaded to approximately 100 mA. at resonance. Set the clipping control, R2, at mid-range and advance the gain control, R3, until 100% modulation is observed on the scope. An audio generator can be connected to J5 for this test, or a sustained whistle can be applied to the microphone in lieu of an audio tone. The output waveform should be free from distortion. Tight coupling to the dummy antenna is important if the waveform is to be clean. The Handbook illustrates proper waveforms for a.m. operation in chapter 11.

² See The Radio Amateur's Handbook, section on amplitude modulation measurements for methods of using an oscilloscope, and section on r.f. measurements for data on diode r.f. indicators.

The amount of clipping used is a matter of choice. Advancing R2 and lowering the level at R3 will increase the clipping. A compromise can be reached while checking out the rig on the air and getting reports from fellow Amateurs. The more clipping that is used, the greater will be the audio punch. The increased talk power will make the audio less pleasant to listen to, but the intelligibility will remain good. If an oscilloscope is not available, the rig can be tuned up for best audio quality by advancing the audio level until a slight flicker is evident in the p.a. plate current. Once this point is reached, back off on the audio gain control until the plate current flickers only on occasional voice peaks. Make certain that the output tank is tightly coupled to the load when operating a.m., to prevent flat-topping on voice peaks.

SOME FINAL THOUGHTS

In areas where the maximum input power is limited to 25 watts, it will be necessary to reduce the screen voltage to the 6HF5 stage so that tight coupling to the load can be maintained during a.m. operation. In such cases as this, the screen voltage can be reduced by increasing the resistance between T1 and the screen. The 30K resistor can be replaced by one of higher value. It is not satisfactory to reduce the input power by loosening the coupling of the pi network to the load, because this procedure would result in a distorted a.m. signal and would cause splatter.

On c.w. it is helpful to detune the p.a. grid tank slightly from resonance. This will lessen oscillator pulling and aid in preventing chirps.

If you're looking for a little rig with a big signal, "Das Softenboomer 160" will fill the bill.

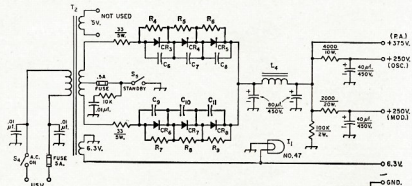


Fig. 6—Power supply schematic. Capacitors are disc ceramic except those bearing polarity marking, which are electrolytic. Resistors are 1/2 watt composition unless otherwise indicated. Resistance is in ohms. C6 to C11 inc.—0.01 uF, 600 volt disc ceramic. C12 to C16 inc.—400 p.i.v. 750 mA. silicon diode. I1—No. 47 pilot lamp. L4—Filter choke from t.v. chassis, 2 H., 200 mA. R4 to R9 inc.—0.47 megohm, 1/2 watt resistor. S4—S.S.S. toggle switch. T2—T.v. power transformer, 350 volts at 250 mA., 6.3 volts at 6 amp., 5 volt winding not used.

AUSTRALIS OSCAR "A" - USERS' GUIDE

PART TWO

Following the February issue of "A.R." in which the Australis Oscar "A" Amateur Radio satellite was described, the following diagrams are given.

The first shows the satellite and the position of the main components including the battery compartment and the electronic modules and also a view of the satellite in its flight configuration.

A block diagram of the main components of the satellite shows details of the transmitters and telemetry system as described last month.

A typical telemetry coding form for reporting the results of an orbit is shown with a typical pass encoded. To clarify the columns, an instruction sheet called "Notes on Using the Australis Oscar "A" Telemetry Coding Form for Telemetry Reporting" is appended.

The telemetry calibration curves follow. It should be noted that the calibration for channels 5 and 7 (internal and skin temperature) is the same. Each curve is approximated by a linear region and the equation for this region is included.

Local co-ordinators have been appointed in each State of Australia to facilitate the distribution and collection of data relating to the project. Any Amateur wishing to track the satellite or with any queries relating to the project should contact his local co-ordinator. Telemetry reporting sets (comprising 3 calibration curves, 2 telemetry coding forms and "Notes") are available from local co-ordinators who will also have all tracking data and other information closer to the flight.

The local co-ordinators for Australia are:—

New South Wales:
A. Swinton, VK2AAK,
P.O. Box 1, Kulnura, N.S.W., 2251.

Victoria:
W. M. Rice, VK3ABP,
54 Maidstone St., Altona, Vic., 3018.

Queensland:
L. Blagborough, VK4ZGL,
54 Bishop St., St. Lucia, Qld., 4067.

South Australia:
B. Tideman, VK5TN,
33 Ningana Ave., Kings Park, S.A., 5034.

Western Australia:

D. Graham, VK6HK,
42 Purdon St., Wembley, W.A. 6019.

Tasmania:

P. Frith, VK7PF,
181 Punchbowl Rd., Launceston, Tas., 7250.

The latest information is that the launch will occur "around the middle of the year" (1968), but is, of course, subject to delays beyond the control of Project Australis.

NOTES ON USING THE AUSTRALIS OSCAR "A" TELEMETRY CODING FORM FOR TELEMETRY REPORTING

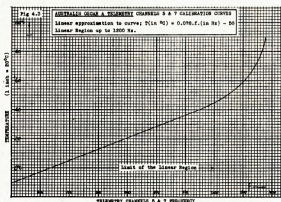
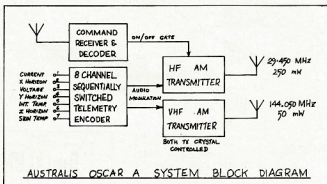
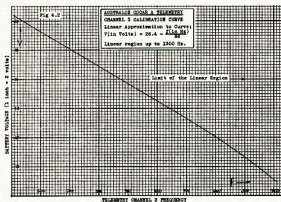
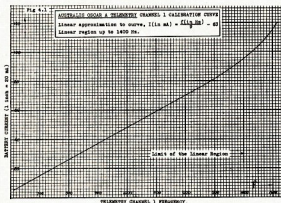
1. Please ensure that your local co-ordinator has a copy of your station resume including the following details:

Name and postal address.

Call sign or station identification.

Station latitude and longitude.

A brief description of v.h.f. equipment such as antenna, pre-amplifier, converter and receiver.



A brief description of your h.f. equipment.

A brief description of the method used to decode the telemetry.

2. Having decoded the telemetry for a pass, select those results which you think are representative of the pass, rejecting wildly inconsistent results.

3. Write clearly with one character per column and one orbit per line. Any comments may be included in the "Comments" column and on the reverse side.

4. Enter your call into "Call" column (if no call sign, write ZZI followed by your initials). Please ensure that a figure is entered into column 3, thus the station A3BCD would enter A into column 2, leaving column 1 blank.

5. "AOS" = Time of acquisition of signal.

"LOS" = Time of loss of signal (to shorten the form, hours of LOS is inferred from AOS time). All times are to be in Greenwich Mean Time (Z or GMT).

6. "R" and "S" columns—readability and strength:

Readability—

- 1 — Unreadable.
- 2 — Barely readable.
- 3 — Readable with difficulty.
- 4 — Readable.
- 5 — Perfect readability.

Strength—

- 1 — Faint signals.
- 2 — Very weak signals.
- 3 — Weak signals.
- 4 — Fair signals.
- 5 — Fairly good signals.
- 6 — Good signals.
- 7 — Moderately strong.
- 8 — Strong signals.
- 9 — Extremely strong signals.

7. The telemetry columns:

Channel 0, "Hi," "A" if the HI keyer is operating normally; "F" otherwise, and describe the failure on the back of the form.

Channel 1, "Current," battery current drain in milliamps.

Channel 3, "Voltage," battery voltage in volts.

Channel 5, "Int. Temp.," temperature of the electronics modules in degrees C.

Channel 7, "Skin Temp.," temperature of the satellite's outer skin in degrees C.

Calibration curves are supplied with this form. Reports on the horizon sensors (channels 2, 4 and 6) should be entered in the comments column and should give some idea of the satellite's spin.

8. When completed, the coding form should be returned to your local co-ordinator who will forward them to Project headquarters. Further copies of the coding form can be obtained from him and any enquiries regarding the project should be made to him.

CITIZENS BAND

The text of a memorandum issued by the G.P.O. [English] is as follows:

"In agreement with the Board of Trade the Postmaster-General has made an Order under Section 7 of the Wireless Telegraphy Act 1927 'specifying' certain radio apparatus for the purposes of that Section. The Order is due to come into force on 1st April, 1968.

"It means that the authority of the Postmaster-General will be required by anyone who wants to manufacture or import radiotelephone transmitters capable of transmitting on any frequency between 26.1 and 29.7 Mc. or between 88 and 108 Mc.

"For some time past the public have been offered small imported transmitters, e.g. the 27 Mc. walkie-talkies, which operate on the wrong frequencies for this country. The Post Office has warned that use of these sets cannot be licensed here because they are liable to interfere with authorised services and has prosecuted a number of people for using them without a licence. The purpose of the Order is to deal with the matter at source and protect the public from being offered sets which they cannot legally use.

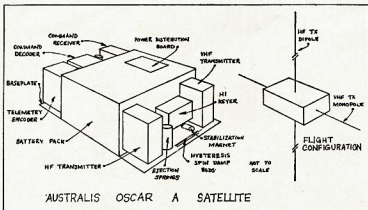
"This does not mean that there will be a complete ban on manufacture or import of all types of apparatus using the frequencies in question. Exemptions will be made for those which can legally be used. Applications and enquiries should be addressed to the G.P.O. Radio and Broadcasting Department, Radio Branch, Armour House, St. Martin's-le-Grand, London, EC1. Some of the frequencies covered by the Order are used by licensed radio amateurs and they will be authorised to build their own apparatus for use within the terms of their licence. This will be done by a general authority published in the London, Edinburgh and Belfast Gazettes.

"The Order effects only two frequency bands and does not disturb the present arrangements for other frequencies. For example, the Post Office has approved some walkie-talkies (which meet its technical conditions and use the correct frequency bands for this country) and will continue to licence their use. It is important to remember that any use of radio in this country requires a licence from the Postmaster-General."

In accordance with the fourth paragraph of the G.P.O. announcement, an authority will be published which will exempt licensed radio amateurs from the restrictions to be imposed by the Order. Amateurs will therefore continue to be able to construct or purchase transmitting and receiving equipment for use in the band 28.0 to 29.7 Mc. and the Order will assist in preventing encroachment on these frequencies by "citizens band" type operation.

The Society has been consulted by the G.P.O. Radio Branch regarding the terms and effect of the Order and there will be continued liaison in connection with the method of exempting equipment designed for radio use.

—From R.S.G.B. "Radio Communication," February, 1968.



AUSTRALIS OSCAR A TELEMETRY CODING FORM																											
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LH41

MAIL TRAIN INCIDENT

Recently one hot day in sunny Queensland in this great big continent of "Down Under," I was making a trip between two provincial towns about 200 miles apart. Townsville to Mackay.

About to embark by rail, I spied an OT Amateur friend, now QRT, "Blind my eyes, if it isn't Harry G." I extended a hand. The one he gave me in return was cruelly malformed due to a car smash, which some years earlier had put paid to a proficient c.w. career—and soured him in the process. Harry was a garrulous s.b. knocker. Secretly, I felt he wanted to put a signal on the air again, but his overt criticism of "duck talk" had put him out on a limb.

Conditioned reflexes took us to the station bar. Here it was so cool, quiet and easy to talk. I pointed questionably to a large jam jar wrapped in brown paper.

"A genetic infusion for my bees," Harry explained. "At least it's a profitable sideline."

The inference being that Amateur Radio was not. So I took him up on it. "So's Ham Radio, socially."

"Yeah, strained through 'duck talk'."

"Oh, so you have a receiver?"

"I listen a bit sometimes."

"Good enough," I thought to myself.

"I'll have him back on the air if I can."

Our libations at the shrine of Bacchus were cut short by the call "All Aboard." He to his compartment, and I to mine. We'd continue the rag chew at the journey's end.

Imagine my shocked surprise, when at the first stop en route, I saw two uniformed policemen lumbering a struggling and unladen Harry from the train. Harry a little eccentric, maybe, but a "nut" impossible. Making a snap decision, I leapt from the train and made pace for the police station, which was just across the street.

What had happened? Well, if I remind you of the old cliché about truth and fiction, you still won't believe it.

☆

Compartments in up country trains in this part of the world carry six passengers. Three on each side. Harry found he had a whole seat to himself but arrayed in front of him were three stiff, matronly ladies of severe countenance and unbending demeanor. They appraised the OT at the lowest common denominator. Who could blame them. Harry does not exude charm or inspire confidence. The term "rough diamond" fitted well.

Nature in her own manner had provided him with a somewhat lopsided cadaverous countenance. The car smash, a twisted body and his clothes were invariably brought off the hook—and today he hadn't got around to shaving and smelled of drink. Swaying a little, he stowed his portmanteau and surreptitiously slid the jar of bees under the seat. He didn't want the old girls making a fuss and he wasn't sure of the regulations concerning the carrying of livestock in passenger compartments. After some indecision, he discarded his coat.

"Morning," he said affably, hoping to start the trip off by a show of sociability. "Hot day."

No answer.

He'd try once more. "Sure could do with some rain. Believe some's forecast."

"My man, you've been indulging in an alcoholic beverage," said the group's spokeswoman.

"Er—yes, did have a couple for the trip. Nothing cool supplied on these ole puffers yer know."

Noses rose in disdain. Their intolerance turned Harry's susceptibilities a little pink. Besides, his inhibitions were down a somewhat.

"Expect me to go out there on the plain and suck a gibber like the natives," he said a little childishly and testily.

Nothing more was said, so the OT settled himself back and relaxed. The rhythmic of wheels against rail junctions began to fade. Heat and alcohol were turning our Ham's brain into a soporific void. Thought was impossible, even of his beloved bees. Soon he slept. Even the ladies began to doze. But the livestock remained vitally alive and things were on the move. Rubber bands have a habit of creeping. The one securing the paper lid on the jam jar suddenly flew through the air with a faint but perceptible ping. The hot, angry bees were loose.

☆

Some miles further along the track, Harry was brought back to consciousness. Something or somethings had invaded the leg of his pants. He scratched—and was suddenly stung into life. Without wishing to alarm the ladies opposite, he began to squirm, twist and shake his legs in a vain effort to dislodge the advancing nuclei, who were swarming after their Queen.

Consternation reigned opposite. Was this "odd bod" having a fit?

Finally the pain and strain broke him. "Get out," he bellowed, leaping to his feet and tearing at his belt strap.

With a scream they fled. Harry crashed the compartment door shut behind them and tore off his pants. He threw up the partly open window and in sheer ecstasy of relief reached out as far as he could and shook the vicious beasts free. But this was not to be Harry's day. In fact the fates were dead against him. Over the roar of the wind he failed to hear an approaching train. The engine took the trousers from his grasp as neatly as railmen exchange staffs. For a moment he stood appalled. The remaining few bees were flying to their freedom. His eyes settled on the jam jar with its sprung lid. Overcome by pique and disgust, he hurled it out the carriage window.

The conductor arrived with the lady complainants huddling close behind.

"Now what's going on here?" he demanded, surveying Harry, clad in shirt tails and underwear, and scratching feverishly. "Where's your trousers, man?"

"Back at Townsville by now."

"What! Do you mean you boarded the train like that?"

"No. It's those damned Be——"

Mistaking the noun for a blasphemous adjective, the train guard raised an authoritative arm, cutting him short. Then deciding he had a "nut" on his hands, resolved that a show of sympathy might restore the situation. Moving closer he confided, "Yeah man, I know how you feel. Three dames like that, plus the heat is more than any man should suffer on a trip like this. Come along with me and I'll find ya a nice quiet seat all to yourself."

But the small intrigue failed. Harry, smarting in body and spirit was in no mood to acquiesce. Somehow he blamed the women for his predicament. Their apparent senseless feminine timidity irked him.

"No," he roared. I paid for this seat and I'm keeping it. Go to Hell and take those Victorian matricians with you."

The guard backed out, closed the door and locked it. "Come with me," he said turning to the women. "I'll find you a vacant compartment."

Back in his van, the guard radioed ahead. "Have what looks like a mild case of exhibitionism aboard—or maybe an aggressive psychopath. Can't tell, but ask the Cops to bring a 'jacket' just in case."

Two members of the constabulary were waiting, armed with the necessary equipment, and pre-set in their minds that old Harry was psychotic. No time was wasted in argument. The train was already late, so on with a "straight jacket," rendering him physically docile. he was removed from the train to the weather beaten precinct of a one-pub town.

☆

"Springing" Harry from the prison walls proved to be a tedious job. The Police weren't inclined to believe his story. Finally as the shadows of the day began to lengthen, Harry was allowed to sign a statement and I presented a cheque for his bail.

Free, and with an hour to fill before the next train, we repaired to the only place possible—the pub. If Harry did not need any more liquor, I surely needed a couple of stiffeners.

The OT gazed miserably into his half empty glass. (A little of the dog that bit him earlier.) "Those flatfoots thought it one heluva big joke at the end didn't they," he mused. "I wonder what the judge will say?"

"Oh, I reckon you'll be charged for carrying livestock on a passenger train—and that's not criminal."

"Yeah, but the fine's heavy. Two thousand dollars maximum—and I've lost the best strain of bees in the country." After a long pause, he smiled wanly. "Shoulda stuck to Amateur Radio I guess."

Hobbywise Harry was now destitute. Spiritually in an abyss. Both objects of his affection had been taken from him. First Amateur Radio, now his apiaristic dreams had vanished.

(Continued on Page 15)

USING THE MR3 CARPHONE ON A.C.

W. GEORGE FRANCIS,* VK3ZCG

THIS method is a simple and easy way of operating the Carphone Junior, both from the battery in the car and also straight from the mains via a step-down transformer to the normal battery plug and by removing the vibrator from its socket and inserting a shorting plug in place of it.

The idea originated as a thought amongst some of the boys in the Western Zone, and brought across to Gippsland by Harry VK3ZX when he moved into Traralgon last year. As he required to run his carphone off the mains inside as well as in the car, so with Graham's (VK3QZ) help, the idea was tried out successfully, and since has been used daily by members of the Eastern Zone who have Carphone Juniors.

No excessive overheating has been observed, but the original vibrator transformer does run at high temperature, so it is suggested to run the set out of its case when used in the shack. The step-down transformer voltage output should not be higher than 12.5 volts. If the voltage is higher, excessive heating may take place. It is well to remember that the vibrator transformer was designed for a higher frequency operation of about 120 cycles or more.

A suitable step-down transformer with a 2-pin polarised socket already mounted is the Ferguson transformer type TS12/60A, or out of your junk box a t.v. mains transformer can be used if it has a 12 volt filament winding or two 6 volt windings that can be connected in series.

Try it, if it is satisfactory, mount the t.v. transformer in a ventilated box and wire a 2-pin polarised outlet socket as per sketch, and connect the a.c. input to the transformer highest primary winding tap, so to keep the secondary voltage as close to 12.5 volts as possible. This will enable the carphone battery lead plug to be plugged in to either the d.c. outlet socket mounted in the car or the step-down transformer.

When changing from one supply to the other, it is most important to remember to remove the V6606 vibrator when used on a.c. and replace it by a shorting plug made out of an old 6-pin valve base with the two larger pins (1 and 6) wired with a shorting link soldered across.

When changing back to d.c. operation, it is also most important to refit the vibrator, otherwise the vibrator transformer will burn out.

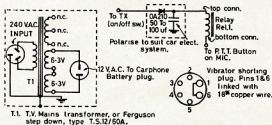
The shorting plug may have a small hole drilled into the side of it and a piece of nylon cord or string attached to it and the protection rail, so it can be always found.

So, it is a simple matter to change from a.c. to d.c. or back again, but firstly before you can use the transmitter on a.c. a small permanent modification has to be carried out on the relay supply, that is, by wiring a OA210 or similar rectifier in series with the change-over relay REL1 bobbin, on the bottom lead closest to the chassis and a smoothing electrolytic capacitor of 50 to 100 uF. connected to chassis.

The rectifier and condenser will have to be polarised according to the d.c.

system of the car, if it is positive or negative earthed, as per sketch. Which ever way you wire it to suit your car, it will operate on the a.c. supply.

This article should enable the Carphone Junior user to extend his operation considerably, as he can now use it as a low power base station, and keep up with the local net and passing highway visitors (Interstate) with no t.v.i. It is recommended to use a ground plane or a vertical polarised skeleton slot yagi or 8 element phased array cut to 146 Mc.



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VK1JH—J. F. Hurren, 8 Yarrow Pl., O'Connor, 2601.
 VK1ZNT—N. R. Teifer, 36 Enderby St., Mawson, 2607.
 VK2AO—A. L. O'Donnell, 51 Hillcrest Ave., Mona Vale, 2103.
 VK3APG—P. W. Fowler, Station: 38 West St., Five Dock, 2046; Postal: P.O. Box 121, Burwood, 2134.
 VK3BNT—Newcastle Technical College (School of Applied Electricity), Maitland Rd., Tighes Hill, 2297.
 VK3BOA—A. A. O'Brien, 28 Alexander St., Hamilton, 2203.
 VK3BSP—S. R. Pedemont, 5 Bibby St., Chiswick, 2046.
 VK3ZKF—B. A. Jones, 10 Little Edward St., Merewether, 2291.
 VK3ZNX—N. K. Shaw, 22 River Rd., Outley, 2223.
 VK3ZZI—D. W. Friend, "Weldons," Old North-ern Rd., Dural, 2158.
 VK3JIA—D. P. James, 22 Massey St., Box Hill, 3128.
 VK3JUL—A. H. F. Nickols, 15 Wallace St., West Brunswick, 3053.
 VK3ABS—G. A. Lane, 12 O'Shannessy St., Nunawading, 3131.
 VK3AFJ—J. E. Paulke, 80 Isabella St., West Geelong, 3218.
 VK3AXZ—E. L. Hume, 104 Asbury St., Ocean Grove, 3226.
 VK3AYF—G. E. Hoddinott, 16 Bendigo St., Hampton, 3188.
 VK3ZEY—H. F. Harden, 33 McComas Gr., Burwood, 3125.
 VK3ZLP—J. P. Payne, 5 Llewellyn St., Beaumaris, 3183.
 VK3ZUO—W. G. Raynor, 9 Mitta St., Box Hill North, 3129.
 VK3ZXL—J. R. McIntyre, "Glenare," Private Bag 228, Drumgung, 3400.
 VK3ZXY—J. J. Pertzelt, 16 Simmonds St., Oakleigh, 3166.
 VK3ZYP—K. L. Philips, 63 Mullum Rd., Ringwood, 3134.

VK4CR—C. Renton, 16 Wilson St., Booval, 4304.
 VK4WT—W. H. Holland, Bells Pocket Rd., Strathpine, 4500.
 VK4ZDS—D. A. Morrish, 79 Muller Rd., Zillmere, 4034.
 VK4ZHW—H. L. Wickes, 44 Kirri St., The Gap, 4061.
 VK4ZTL—D. Laurie, 25 Simla Ave., Geebung, 4034.
 VK4ZJW—R. Webb, 151 Alderley St., Too-woomba, 4350.
 VK5AN—J. W. Emmel, 15 Patawaalonga Front-ange, Glenelg, 5045.
 VK5IH—E. Hanham, 7 Short Ave., Glenelg East, 5045.
 VK5KW—C. J. Kosina, 18 Wilfred Ave., Salis-bury, 5108.
 VK5LI—R. C. Cummings, Station: Portable; Postal: C/o. Superintendent, Radio Branch, 31 Franklin St., Adelaide, 5000.
 VK5OA—K. L. O'Rourke, 2 Lansell St., Mt. Gambier, 5290.
 VK5ZPJ—A. R. Jamieson, 14 Lascelles Ave., Brighton, 5048.
 VK6EU—P. W. Dew, 14 Windfield St., Lyn-wood, 6155.
 VK7RO—R. E. Rogers, 1 Wellington Rd., Lind-isfarne, 7015.
 VK7ZX—W. J. Morphett, 139 Talbot Rd., Launceston, 7250.
 VK9ZFG—A. E. Hiscock, Station: Hubert Mur-ray Hwy., Boroko, P. Postal: C/o. A.B.C. P.O. Box 1359, Boroko, P.
 VK9AL—A. Nickols, Amery Ice Shelf.
 VK9IA—D. P. James, Macquarie Island.
 VK9JW—J. G. Kaarsberg, Wilkes.
 VK9VK—V. J. Kitney, Mawson.

VK3AKQ—A. E. H. Swindon. Licence not re-newed.
 VK3ALI—G. J. H. Dunkley. Licence not re-newed.
 VK3ZBN—G. A. Lane. Now VK3ABS.
 VK3ZPO—D. P. James. Now VK3IA.
 VK3ZRT—B. C. Thoman. Licence not renewed.
 VK3EK—E. F. Keagan. Left country.
 VK3DR—W. H. H. Wedemeyer. Deceased.
 VK7XL—G. W. Groves. Deceased.
 VK935—N. E. Parsons. Transferred to N.S.W.

KEEN DX'ER



JIRI KRAL, OK2RZ

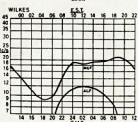
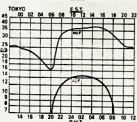
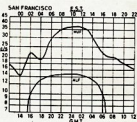
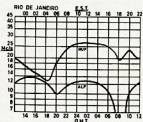
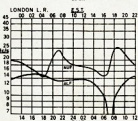
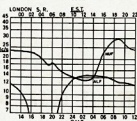
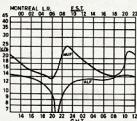
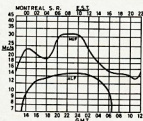
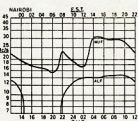
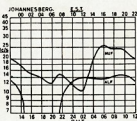
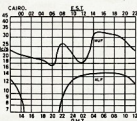
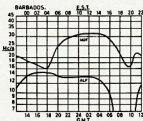
Jiri is an f.b. operator using 14, 21, and 28 Mc. AL/AL. He is keen to work VK. You won't miss his big signal. He is one of the modern young group of DX'ers. Give him a shout. His address is Hostalkovice 288, Okres Ostrava, Czechoslovakia.

CANCELLATIONS

VK1DS—D. J. Slade (Capt.). Transferred Inter-terstate.
 VK2GS—G. P. Edwards. Licence not renewed.
 VK2VM—G. W. Morris. Deceased.
 VK3AMS—R. J. Slick. Deceased.
 VK2ASV—S. A. Sibby. Transferred Interstate.
 VK2ZHT—H. E. Jones. Transferred Interstate.
 VK2ZLK—K. J. Corr. Not renewed.
 VK2ZNT—N. R. Teifer. Now VK1ZNT.
 VK2ZYM—R. C. Morgan. Transferred Inter-terstate.

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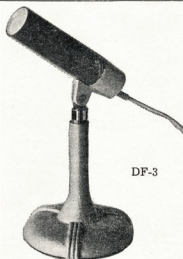
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W

Sub-Editor: ALAN SHAWSMITH, VK4SS
35 Whynot St., West End, Brisbane, Qld., 4101

Conditions on all bands these past few weeks seem to be holding up very well. 20 mx has opened to Europe and Asia on odd mornings briefly around 1845-1915. Some QSOs have been made. Forty has been good to Africa and Europe, from 1700 almost nightly with some rare ones coming through strongly. 20 mx is quiet but open day and night, particularly after 1700 to the West. 2.5 is best from 1100 until 2000 and later. Firstly Europeans then Ws at 1700 and finally the odd Central American and Indian. Ten now opens a little later at about 1300 to Europe. If the band seems blank, try a CQ or two. The result might surprise you.

NOTES AND NEWS

Afghanistan: YATNCZ 14091 1400. Also audible at this QTH 1900.
Aldabra: VQ4VU will QRV on all bands. Lately using the frequency 14170 at 2800. Also has skeds with ZS stations 13180 1600. John goes QRL. TBAZ 21520 2200. Also QSO chase him up. He also uses 7005 1900 occasionally and 28600.

Bahrain: MP4BC is daily active on 7094 1900 and 14 c.w., a little before or after this. MP4BCB uses s.s. 14193 1330. Also MP4BCB 7005 1900z.

Hong Kong: VS8CO 14180 1200. VS8DO 7 and 3.5 at low end, 1000 and later, VS8GN 14090 1300. VS8AG 14180 1300. VS8FZ and VS8FZ both use 21 and 28 c.w. from 0900z.
Galapagos: HC8RS 14170 2200. QSL 5787 Guayaquil, Radio Club, Ecuador. HC8FN also reported active but no information on same.
Tahiti: RTTAN 14008 2200. QSL P.O.B. 443, Ft. Lamuy.

Central AF. TR9D. Only information on this one that the QSL goes to the U.S. Embassy, Car.

Cape Verde: CH4BC 14170 1900. QSL P.O.B. 21, Viana, Cape Verde Is.
Congo: TJ1AA 14002 2200. TJ1QQ 14008 0730. TJ1AA 14006 1900.

Cambodia: 9U5BB 14204 0500.
East Timor: 9U5BB 14204 0500. QSL WASPUQ.
Indonesia: PK1SH 14020 1200. QSL P.O.B. 2127, Djarta, see below.

Ivory Coast: 9U5BB 14204 0500. QSL P.O.B. 2127, Djarta, see below.
Abidjan: TU2BQ (see 2130). P.O.B. 1017, Abidjan.

Senegal: 6W5BM 14221 0600. QSL P.O.B. 290. See note: AI CR5SP 14187 0630. QSL to W2GKH.

San Andreas Is.: HK0BKK reported on 7 M. s.s.b.c.w. QSL W4IAHF.

Saudi Arabia: 7Z3AB 14215 1700. QSL W4YDD.
Nepal: N1MM 14188 1900. QSL W3KVC.

Mauritius: VQ8CA 14105 1900. VQ8CC 14185 1200, also on 14 c.w. around 1800-2000.

Malawi: 7Q7EC reported going QRT about now but 7Q7LC will take his place on c.w. Try 14045 1700. QSL W4WJF.

Maldives Is.: VS5MB is on nightly 14050 1700 onwards. QSL W3CTN.

Vietnam: 9U5BB 14204 0500. See note: AI CR5SP 14187 0630. QSL to W2GKH.

Caicos Is.: VP5YL 7005 1900. Name Susan/YL. QSL via A.R.R.L.

Barbados: Remember the ever active VP6IP on bands 7, 14, 21. He is now using the call 8P6UB. QSL to Col Jones, Hillcrest, Palm Beach, Gap, Hastings, Christchurch, or via W5EUKF.

Mongolia: JT1AA 14050 0800. Note Tbc.
Agiers: Harry TX0AH QRV on all bands c.w.s.b. 14 c.w. sometimes on 7005 1900. Also 7X0WV, 7X2ED and others.

Sierra Leone: 9L1JJ who is G3HEP is QRV using a KW2000 on 28800 around 1000 and earlier.

Argentina Is.: VP8IU 2000 14108. QSL to VETACN.

Bouvet Is.: As reported earlier, any activity from here prior to 1/1/88 may not be valid. 3Y0ED is said to be on 14103 0600 and asking QSLs to W2GFA.

Fernando Poo: EA0CM/HB0CM will be leaving here shortly. Another op. will take his place. Mode 14 s.b. 1700. No other information. EA0AH audible here 1400 1700.

Turks Is.: VP5AA 28600 1500.

Gloriesues Is.: FR7ZO/G 14030 1600. QSL P.O.B. 4, Saint Clothilde, Reunion Is.
West Samoa: 9W1AS 21270 0500. Also 14 s.b. Occasionally c.w. 9W1AT 14170. QSL WA4ZDI.

Seychelles: VQ9L 21303 1400. VQ9B worked here 14145 1800, says he may be there two more years. QSL P.O.B. 911, Mahe.

Pitcairn Is.: Tom Christian reported his honeymoon in U.S.A. as super. He arrived back home in his Utopia and re-commenced his Amateur Radio activity on 21335 at 1900.

Rodriguez: VQ8BZ. This stint is now QRT. QSLs go to H. S. Lambert, La Caveres, Vacos, Mauritius.

Irca: YI2AC 14209 s.b. and c.w. 1400. (Unofficially reported as phone.)
Spanish Sahara or Rio de Oro: EA9EG tried going great guns both c.w. and s.b. Try 14116 1700 and later. Also c.w. around 1900.

Don Miller, W9WNY: Reported as saying he is trying about going back to Heard Island?

San Felix Is.: Has been on 14 s.b. Seems now that QSLs go to XENXZ. Call is CE0XE.

Antarctica: John VK0JV should be on from Wilkes Base now. He is ex 5V1JW, 9M4YJ, 5V1JW, 9M4YJ, VK3BJK, VK4GU. Send his call to Norm VK3UO, La Victoria Rd., Norwood, Vic. 3070. Freq. will be 14075.

W9WNY: Don Miller: That man again. Says his 200-page book, "Amateur Radio DXing" will be published about March. Now that could be a dandy. (I must confess I'm interested...AL.)

Profits from the book will go to future DX projects. (Does he never get tired, Well, I am.)

Dinto Is.: A couple of ops. from Okinawa intend to activate this one during February, and maybe into March. Call will be KD6.

No other info available. (Guess I'm the only one who have asked KD6 before this—but still no QSL...hi...AL.)

ACTIVITIES

Dad VK4MY is dividing his time between 14 c.w. and s.b. and not missing much. On s.b.: CE3UF/0 (Fernandez), CE2ZN/0, FR7ZO, VQ8BZ (Rodriguez), UW9YQ (Izone 18), CP-4AK/S, YP2AA (c.w.), DX0C (DX), HK4TA, HZ3AB, 4ATPB, HS1CB, TZ1AC, PK7YQ, PJ2CB, TZ1AZ, PZ1CI, H1BLA, UTR5A, 4K4AA, 4K4AB, 4K4AC, 4K4AD, 4K4AE, 4K4AF, 4K4AG, 4K4AH, 4K4AI, 4K4AJ, 4K4AK, 4K4AL, 4K4AM, 4K4AN, 4K4AO, 4K4AP, 4K4AQ, 4K4AR, 4K4AS, 4K4AT, 4K4AU, 4K4AV, 4K4AW, 4K4AX, 4K4AY, 4K4AZ, 4K4BA, 4K4BB, 4K4BC, 4K4BD, 4K4BE, 4K4BF, 4K4BG, 4K4BH, 4K4BI, 4K4BJ, 4K4BK, 4K4BL, 4K4BM, 4K4BN, 4K4BO, 4K4BP, 4K4BQ, 4K4BR, 4K4BS, 4K4BT, 4K4BU, 4K4BV, 4K4BW, 4K4BX, 4K4BY, 4K4BZ, 4K4CA, 4K4CB, 4K4CC, 4K4CD, 4K4CE, 4K4CF, 4K4CG, 4K4CH, 4K4CI, 4K4CJ, 4K4CK, 4K4CL, 4K4CM, 4K4CN, 4K4CO, 4K4CP, 4K4CQ, 4K4CR, 4K4CS, 4K4CT, 4K4CU, 4K4CV, 4K4CW, 4K4CX, 4K4CY, 4K4CZ, 4K4DA, 4K4DB, 4K4DC, 4K4DD, 4K4DE, 4K4DF, 4K4DG, 4K4DH, 4K4DI, 4K4DJ, 4K4DK, 4K4DL, 4K4DM, 4K4DN, 4K4DO, 4K4DP, 4K4DQ, 4K4DR, 4K4DS, 4K4DT, 4K4DU, 4K4DV, 4K4DW, 4K4DX, 4K4DY, 4K4DZ, 4K4EA, 4K4EB, 4K4EC, 4K4ED, 4K4EE, 4K4EF, 4K4EG, 4K4EH, 4K4EI, 4K4EJ, 4K4EK, 4K4EL, 4K4EM, 4K4EN, 4K4EO, 4K4EP, 4K4EQ, 4K4ER, 4K4ES, 4K4ET, 4K4EU, 4K4EV, 4K4EW, 4K4EX, 4K4EY, 4K4EZ, 4K4FA, 4K4FB, 4K4FC, 4K4FD, 4K4FE, 4K4FF, 4K4FG, 4K4FH, 4K4FI, 4K4FJ, 4K4FK, 4K4FL, 4K4FM, 4K4FN, 4K4FO, 4K4FP, 4K4FQ, 4K4FR, 4K4FS, 4K4FT, 4K4FU, 4K4FV, 4K4FW, 4K4FX, 4K4FY, 4K4FZ, 4K4GA, 4K4GB, 4K4GC, 4K4GD, 4K4GE, 4K4GF, 4K4GG, 4K4GH, 4K4GI, 4K4GJ, 4K4GK, 4K4GL, 4K4GM, 4K4GN, 4K4GO, 4K4GP, 4K4GQ, 4K4GR, 4K4GS, 4K4GT, 4K4GU, 4K4GV, 4K4GW, 4K4GX, 4K4GY, 4K4GZ, 4K4HA, 4K4HB, 4K4HC, 4K4HD, 4K4HE, 4K4HF, 4K4HG, 4K4HH, 4K4HI, 4K4HJ, 4K4HK, 4K4HL, 4K4HM, 4K4HN, 4K4HO, 4K4HP, 4K4HQ, 4K4HR, 4K4HS, 4K4HT, 4K4HU, 4K4HV, 4K4HW, 4K4HX, 4K4HY, 4K4HZ, 4K4IA, 4K4IB, 4K4IC, 4K4ID, 4K4IE, 4K4IF, 4K4IG, 4K4IH, 4K4IJ, 4K4IK, 4K4IL, 4K4IM, 4K4IN, 4K4IO, 4K4IP, 4K4IQ, 4K4IR, 4K4IS, 4K4IT, 4K4IU, 4K4IV, 4K4IW, 4K4IX, 4K4IY, 4K4IZ, 4K4JA, 4K4JB, 4K4JC, 4K4JD, 4K4JE, 4K4JF, 4K4JG, 4K4JH, 4K4JI, 4K4JJ, 4K4JK, 4K4JL, 4K4JM, 4K4JN, 4K4JO, 4K4JP, 4K4JQ, 4K4JR, 4K4JS, 4K4JT, 4K4JU, 4K4JV, 4K4JW, 4K4JX, 4K4JY, 4K4JZ, 4K4KA, 4K4KB, 4K4KC, 4K4KD, 4K4KE, 4K4KF, 4K4KG, 4K4KH, 4K4KI, 4K4KJ, 4K4KL, 4K4KM, 4K4KN, 4K4KO, 4K4KP, 4K4KQ, 4K4KR, 4K4KS, 4K4KT, 4K4KU, 4K4KV, 4K4KW, 4K4KX, 4K4KY, 4K4KZ, 4K4LA, 4K4LB, 4K4LC, 4K4LD, 4K4LE, 4K4LF, 4K4LG, 4K4LH, 4K4LI, 4K4LJ, 4K4LK, 4K4LL, 4K4LM, 4K4LN, 4K4LO, 4K4LP, 4K4LQ, 4K4LR, 4K4LS, 4K4LT, 4K4LU, 4K4LV, 4K4LW, 4K4LX, 4K4LY, 4K4LZ, 4K4MA, 4K4MB, 4K4MC, 4K4MD, 4K4ME, 4K4MF, 4K4MG, 4K4MH, 4K4MI, 4K4MJ, 4K4ML, 4K4MN, 4K4MO, 4K4MP, 4K4MQ, 4K4MR, 4K4MS, 4K4MT, 4K4MU, 4K4MV, 4K4MW, 4K4MX, 4K4MY, 4K4MZ, 4K4NA, 4K4NB, 4K4NC, 4K4ND, 4K4NE, 4K4NF, 4K4NG, 4K4NH, 4K4NI, 4K4NJ, 4K4NK, 4K4NL, 4K4NM, 4K4NN, 4K4NO, 4K4NP, 4K4NQ, 4K4NR, 4K4NS, 4K4NT, 4K4NU, 4K4NV, 4K4NW, 4K4NX, 4K4NY, 4K4NZ, 4K4OA, 4K4OB, 4K4OC, 4K4OD, 4K4OE, 4K4OF, 4K4OG, 4K4OH, 4K4OI, 4K4OJ, 4K4OK, 4K4OL, 4K4OM, 4K4ON, 4K4OO, 4K4OP, 4K4OQ, 4K4OR, 4K4OS, 4K4OT, 4K4OU, 4K4OV, 4K4OW, 4K4OX, 4K4OY, 4K4OZ, 4K4PA, 4K4PB, 4K4PC, 4K4PD, 4K4PE, 4K4PF, 4K4PG, 4K4PH, 4K4PI, 4K4PJ, 4K4PK, 4K4PL, 4K4PM, 4K4PN, 4K4PO, 4K4PP, 4K4PQ, 4K4PR, 4K4PS, 4K4PT, 4K4PU, 4K4PV, 4K4PW, 4K4PX, 4K4PY, 4K4PZ, 4K4QA, 4K4QB, 4K4QC, 4K4QD, 4K4QE, 4K4QF, 4K4QG, 4K4QH, 4K4QI, 4K4QJ, 4K4QK, 4K4QL, 4K4QM, 4K4QN, 4K4QO, 4K4QP, 4K4QQ, 4K4QR, 4K4QS, 4K4QT, 4K4QU, 4K4QV, 4K4QW, 4K4QX, 4K4QY, 4K4QZ, 4K4RA, 4K4RB, 4K4RC, 4K4RD, 4K4RE, 4K4RF, 4K4RG, 4K4RH, 4K4RI, 4K4RJ, 4K4RK, 4K4RL, 4K4RM, 4K4RN, 4K4RO, 4K4RP, 4K4RQ, 4K4RR, 4K4RS, 4K4RT, 4K4RU, 4K4RV, 4K4RW, 4K4RX, 4K4RY, 4K4RZ, 4K4SA, 4K4SB, 4K4SC, 4K4SD, 4K4SE, 4K4SF, 4K4SG, 4K4SH, 4K4SI, 4K4SJ, 4K4SK, 4K4SL, 4K4SM, 4K4SN, 4K4SO, 4K4SP, 4K4SQ, 4K4SR, 4K4SS, 4K4ST, 4K4SU, 4K4SV, 4K4SW, 4K4SX, 4K4SY, 4K4SZ, 4K4TA, 4K4TB, 4K4TC, 4K4TD, 4K4TE, 4K4TF, 4K4TG, 4K4TH, 4K4TI, 4K4TJ, 4K4TK, 4K4TL, 4K4TM, 4K4TN, 4K4TO, 4K4TP, 4K4TQ, 4K4TR, 4K4TS, 4K4TT, 4K4TU, 4K4TV, 4K4TW, 4K4TX, 4K4TY, 4K4TZ, 4K4UA, 4K4UB, 4K4UC, 4K4UD, 4K4UE, 4K4UF, 4K4UG, 4K4UH, 4K4UI, 4K4UJ, 4K4UK, 4K4UL, 4K4UM, 4K4UN, 4K4UO, 4K4UP, 4K4UQ, 4K4UR, 4K4US, 4K4UT, 4K4UU, 4K4UV, 4K4UW, 4K4UX, 4K4UY, 4K4UZ, 4K4VA, 4K4VB, 4K4VC, 4K4VD, 4K4VE, 4K4VF, 4K4VG, 4K4VH, 4K4VI, 4K4VJ, 4K4VK, 4K4VL, 4K4VM, 4K4VN, 4K4VO, 4K4VP, 4K4VQ, 4K4VR, 4K4VS, 4K4VT, 4K4VU, 4K4VV, 4K4VW, 4K4VX, 4K4VY, 4K4VZ, 4K4WA, 4K4WB, 4K4WC, 4K4WD, 4K4WE, 4K4WF, 4K4WG, 4K4WH, 4K4WI, 4K4WJ, 4K4WK, 4K4WL, 4K4WM, 4K4WN, 4K4WO, 4K4WP, 4K4WQ, 4K4WR, 4K4WS, 4K4WT, 4K4WU, 4K4WV, 4K4WX, 4K4WY, 4K4WZ, 4K4XA, 4K4XB, 4K4XC, 4K4XD, 4K4XE, 4K4XF, 4K4XG, 4K4XH, 4K4XI, 4K4XJ, 4K4XK, 4K4XL, 4K4XM, 4K4XN, 4K4XO, 4K4XP, 4K4XQ, 4K4XR, 4K4XS, 4K4XT, 4K4XU, 4K4XV, 4K4XW, 4K4XX, 4K4XY, 4K4XZ, 4K4YA, 4K4YB, 4K4YC, 4K4YD, 4K4YE, 4K4YF, 4K4YG, 4K4YH, 4K4YI, 4K4YJ, 4K4YK, 4K4YL, 4K4YM, 4K4YN, 4K4YO, 4K4YP, 4K4YQ, 4K4YR, 4K4YS, 4K4YT, 4K4YU, 4K4YV, 4K4YW, 4K4YX, 4K4YY, 4K4YZ, 4K4ZA, 4K4ZB, 4K4ZC, 4K4ZD, 4K4ZE, 4K4ZF, 4K4ZG, 4K4ZH, 4K4ZI, 4K4ZJ, 4K4ZK, 4K4ZL, 4K4ZM, 4K4ZN, 4K4ZO, 4K4ZP, 4K4ZQ, 4K4ZR, 4K4ZS, 4K4ZT, 4K4ZU, 4K4ZV, 4K4ZW, 4K4ZX, 4K4ZY, 4K4ZZ.

SOME QTHs

VP2AZ—QSL WONGP.
CE1AE—QSL WASPUQ.
8Y1MM—QSL 14170.
8P6AH—QSL VE3DLG.

VP2AC—QSL WA4AYX.
HM1AJ—QSL P.O.B. 2306, Seoul, Korea.
CT1AS—QSL GZMI.
VP1P—QSL W4DSS, Panama S.
ET3RE—QSL WLSEF.
V51SFE—Does not QSL.
VK1AA—QSL 14170.
VP6AO—QSL VE3DLG.
VP1PV—Box 17, Cayo.
5U7AN—QSL 5U7AL.
9J1GQ—QSL 14170.
OD5BZ—QSL WZCZQ.
ZS2MI—QSL W4WJF.
5N2AAK—QSL W4WJF.
5R8AS—QSL WE2FX.
PX1IE—QSL P4S.
9J1GQ—QSL 14170.
GDRFX—QSL K4MQL.
KG6IF—QSL WE4NB.
OX4AA—QSL KB8EG.
5N1MM—Father Moran in Katmandu. QSL to W3KVC. E. W. Harroway, Jr., FRD 2, Tioga, P.A.

AWARDS

Worked 100 U Stations (W-100-U)
The award is issued by the Central Radio Club of the U.S.S.R.

1. W-100-U is available to all Amateurs of the world for two-way contact with at least 100 U Stations (W-100-U). The contacts, including at least 5 UA, UW9 stations. The contacts to be made after 1st January, 1980.

2. The contacts to be made on c.w. or phone, or one or more of the Amateur bands (3, 7, 14, 21, 28 Mc.).

3. Minimum reports to be RST37, RSM 335. Of the 100 U Stations of the contacts must be sent to the Central Radio Club, with a list of the same, giving date, time, band and other details of the QSOs.

Address for the application: Central Radio Club, P.O. Box 88, Moscow, U.S.S.R.

RADIO AMATEURS (OR SHAMATEURISM) IN INDONESIA

Around the latter part of 1965, when the power of Dr. Sukarno first began to wane, there arose mainly among student groups many Amateurs of the QSOs.

It is not known if these rigs were used for political purposes, but they have, until now, provided a daily programme of music, popular music, and each station charging a small fee for each record played.

General Suharto has now issued a decree banning the use of Mass Media Entertainment. Only those who intend to operate bona fide experimentally, will be issued with a licence.

Several PK stations have appeared in recent weeks on the DX bands, with modes of S.S. and c.w. It is to be hoped that the activities of these clubs are not curtailed, as they are in big demand the world over.

QRP CLUB NEWS

New members include VKs 3AQ, 3AHG, 9TL, 4WO and S.w.I. Thorpe. A new innovation will be the quarterly QRP QSO Parties. This will help to live up the club's 14th anniversary. Financial members will you please pay your dues. Membership may be withdrawn from those who after a certain period have not been active in the club's social party. Please write Barry VK5BS for any queries you have about the club. QTH is 18 Cornish St, Glenelg N.S.W.

My thanks, as always, to the column's supporters. 73, DX, AI VK4SS/I.A.R.J.S.

PROVISIONAL SUNSPOT NUMBERS FOR DECEMBER 1980

Dependent on observations at Ince Observatory and its stations in Locarno and Arosa.

Day	R	Day	R
1	131	16	100
2	131	17	122
3	131	18	170
4	131	19	129
5	131	20	129
6	131	21	130
7	131	22	105
8	131	23	101
9	131	24	81
10	131	25	111
11	131	26	142
12	131	27	142
13	131	28	165
14	131	29	141
15	131	30	121
		31	108

Mean equals 123.2.

Smoother Mean for June, 1967: 87.8.

Predictions of the smoothed monthly Sunspot Numbers for the coming six months:

Month	1980	1981
January	110	117
February	117	117
March	115	116

Contest Information

CONTEST CALENDAR

2nd/3rd March: 34th A.R.R.L. International DX Competition (2nd week-end phone).
 9th/10th March: B.E.R.U.
 16th/17th March: 34th A.R.R.L. International DX Competition (2nd week-end c.w.).
 6th/7th April: "CQ" WPX Phone Contest (s.d. only).
 11th/12th May: 17th OZ-CCA Contest (c.w.).
 12th/13th October: 21/28 Mc. Phone Contest.

1967 "CQ" S.S.B. CONTEST OCEANIA RESULTS

AUSTRALIA				Prefixes	
Call	Band	Score	QSOs	Wkd.	
VK2KM	21	159,768	432	126	
VK2AD	14	148,520	709	163	
VK3AKX	A	117,484	439	92	
VK3XB	A	1,380	25	20	
VK3VQ	28	97,368	276	64	
VK3SM	21	97,307	139	47	
VK3ARX	14	47,970	199	82	
VK3KS	14	330	11	10	
VK3JL	A	4,178	48	39	
VK4WF	21	30,618	159	64	
VK4DO	14	27,000	129	72	
VK5AX	14	9,702	70	49	
COOK ISLANDS					
ZK1AR	A	239,355	622	135	
HAWAII					
KH6J	A	350,197	1,790	113	
WP6AN/KH6	A	211,614	638	114	
KH6BZF	21	42,903	232	63	
WB6FHL/KH6	21	37,296	206	63	
LAOS					
XW5AX	A	521,888	1,001	188	
TERRITORY OF NEW GUINEA					
VK6GN	A	501,070	1,009	170	
VK6KS	14	51,297	228	81	
NEW ZEALAND					
ZL1KG	A	1,045,152	1,417	251	
ZL1AG	A	856,052	1,138	172	
ZL1AB	28	35,965	248	47	
ZL1AGO	21	112,548	346	113	
ZL1AB	21	19,498	129	54	
ZL1AAS	14	144,160	363	136	
PHILIPPINES					
DUIFH	A	412,344	779	184	
CONTINENTAL LEADERS					
28 Mc.	VK3VQ	67,368 points			
21 Mc.	VK1KM	159,768 points			
14 Mc.	VK1APK	348,550 points			
7 and 3.5 Mc.	No entries.				
MERITORIOUS OPERATION					
Highest All-Band Score—Single Operator:	ZL1KG	1,045,152 points			

1967 A.R.R.L. INTERNATIONAL DX TEST—AUSTRALASIAN RESULTS

PHONE				Multi-Op's Contacts	
Call	Score	Multi-Op's	Score	Multi-Op's	Score
VK2APK	910,860	190	1,506		
VK3ZD	540,218	164	1,096		
VK3AD	236,968	116	681		
VK3ARX	56,964	47	404		
VK3VN	42,822	61	234		
VK3XB	7,884	35	73		
VK3KS	1,373	17	35		
VK3FU	1,459,773	203	2,397		
VK2GN	168,260	110	510		
ZL1QH	122,125	205	2,478		
ZL1KG	860,310	158	1,815		
ZL1AG	560,001	173	1,099		
ZL1IL	266,832	109	816		
ZL1AB	51,528	78	226		
* Multi-operator.					
C.W.					
VK2EO	1,571,760	222	2,360		
VK2APK	817,908	182	1,496		
VK2GV	497,056	146	1,112		
VK2VN	219,438	146	501		
VK2ST	172,078	97	503		
VK2ARX	12,828	46	114		
VK4FH	32,820	61	131		
VK3XB	34,860	70	156		
VK3AF	35,040	40	276		
VK3APN	28,887	41	238		
VK3OP	26,428	38	236		
VK3KS	15,328	46	114		
VK3UM	6,096	24	93		
VK4WO	1,260	14	30		
VK6GN	159,840	120	444		
ZL1AG	1,019,080	183	1,748		
ZL1HW	354,560	128	945		
ZL1AFW	183,406	106	577		
ZL1AQ	43,828	48	502		
ZL1OY	37,620	35	228		

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

THANKS FROM MACQUARIE OPERATOR

Editor "A.R.L." Dear Sir,
 Having just returned from Macquarie Island, I would like to express my sincere thanks to the many Amateurs who helped me and other personnel of the Macquarie 1967 expedition during that year. I can assure all those Amateurs your help, whatever form it took, was most appreciated.
 My special thanks go to Sam VK7SM who patiently took my logs over the year and sent them regularly to Greg VK7KJ who acted as my QSL manager and did such a first class job. Many thanks to you both, Sam and Greg, for a terrific job well done.

My appreciation to those Amateurs who patiently waited their turn for a QSO, but to those who couldn't wait their turn and persisted in interrupting established QSOs for a new country or what ever other seab reason they may have had I can only say I am glad there are more who play the game than there are who don't.

Those who lived up to the Amateur's Code made Amateur operating on Macquarie a wonderful experience—but those who didn't made it distasteful often. I certainly hope to have an eyeball QSO with the many friends I made whilst on Macquarie through Amateur Radio. A great hobby particularly whilst down South.

—Rodney Champness, VK3UG, ex VK0CR.

THE "XL" OPERATOR CLUB

The name of this fraternity has two meanings: (1) The Latin figure XL stands for "forty" and (2) The English pronunciation of XL is "excellent" or "excellent".

The membership of this fraternity is based on long-term service and excellent achievements in the fields of Amateur Radio. The "XL" operators could claim to belong to the "High Society" of Amateur Radio. The requirements of this fraternity are intensive activity of many years on various Amateur bands.

A minimum of forty (40) points is required for the membership. The points may be earned as follows:

- Five (5) points for the first full 10 years the applicant has been duly licensed as transmitting Amateur, plus three (3) points for each full five years thereafter.
- Five (5) points for the first 200 DXCC countries confirmed, plus three (3) points for each additional 50 countries confirmed.
- Five (5) points for each 100 DXCC countries confirmed on each of the 28, 21 and 14 Mc. Amateur bands.
- Three (3) points for each 50 DXCC countries confirmed on each of the 7 and 3.5 Mc. Amateur bands.
- Two (2) points for each 20 DXCC countries confirmed on each of 1.8 Mc. and v.h.f./u.h.f. V.h.f./u.h.f. is considered as one band. The country totals are considered regardless of the mode of operation, so one country may be counted only once on each band.

A.R.R.L. DXCC rules apply for certifying countries. However, official A.R.R.L. DXCC credit is not required.

There are no endorsements. The "XL" Club is sponsored by the Award Hunters' Club International.

Count the points and, if you can claim at least 40 points in your application. Give the following details: Your call, your name and complete mailing address, plus (1) the date of your first transmitting licence (in case there have been interruptions, give the details), (2) the DXCC score confirmed (or credited by the A.R.R.L.), (3) the number of confirmed countries regularly on each band (see the calculating table). Finally certify personally that the information given in your application is true. No other certification is necessary; we trust the word of "XL" operators. If false information is given it will spoil the Ham Spirit.

Enclose sufficient return postage (there is no membership fee), and address the application to the Award Hunters' Club International, c/o. OZ2YV, John Velamo, Isokaari 4-B-30, Helsinki 26, Finland.

Tell your friends about the "XL" Club. This recognition is really worth working for, and no doubt the "XL" Amateurs will be recognised by all Amateurs as examples of successful operating and loyalty to Amateur Radio. Remember, Ham Spirit is our Guide Star!

LOW DRIFT CRYSTALS

1.6 Mc. to 10 Mc.,
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 Secretary, or W.I.A., P.O. Box 38,
 East Melbourne, C2, Victoria.



FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL QSL BUREAU

Henry Anderson, VK6HA, advises he intends visiting CR8 from 15th to 29th April inclusive and has applied for a licence to operate from CR8.

Outward members and others please note the change of address for the Norwegian Radio Relay League to Box 21, Refstad, Oslo 5, Norway. This address includes the QSL Bureau.

The L.A.R.C.V. advise of an award to commemorate the 3rd Presidential visit to Cape Verde Islands, 9th to 18th February. Any Amateurs who worked two CR4 stations during that period are eligible. Details from the Federal Bureau.

Will the station who agreed to act as QSL Manager for Dave VK0IA during his sojourn at Macquarie Island this year please contact the Bureau.

The Radio Sports Federation of the U.S.S.R. forwards details of its annual DX Contest to be held from 21z May 4 to 21z May 5. The contest is for CW only and all bands 1.5 to 28 Mc. may be used and at least 12 hours of operation is necessary to qualify for an award. U.S.S.R. stations send a QSL to the Bureau and all others send RST plus serial commencing with 001. Object is to contact as many stations as possible in any country but contacts between stations in any city are not permitted. Contacts on same continent count 1 pt. on different continents 3 points. Band score is sum of contact points multiplied by number of countries worked on that band. Total all band score is sum of scores on each band. Awards of certificates and bands will be made to the highest three stations on each band in each country and similarly to the highest three multi-band stations in each country provided at least five logs are received from that country otherwise only one single band or one multi-band award will be made. Logs to Box 21, Macquarie Island, New South Wales. Details required may be had from the Federal Bureau.

As of February 7 the Post Office is just commencing to catch the backlog of 2nd class mail that accumulated during the recent strike. During January cards through the Federal Bureau slumped to 1000 a day. Further organisation of the strike but appreciated the let-up enabling his broken leg to get more rest.

—Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

N.S.W. DIVISION CONVENTION

The Division's Convention was held over the Australia Day holiday week-end in hot summer weather, commencing with the general meeting held at Aitchison St. on Saturday.

The meeting was opened by President-Chairman Keith 2KJ and after reading of minutes a further 17 members were admitted and welcomed to membership of the W.I.A. In reporting to the meeting, Keith said that the postal strike had hampered the delivery of business and personal mail to the Division generally. Keith then briefly explained the new membership renewal procedure and gave details of the Convention arrangements.

The meeting was then handed to Harold 2AAH to announce that the Lecturer of the Year Award was won by Howard Lilley, 2AYT, for his 'The New Records', Harold 2AAH was the winner. John Featherstone, being a close runner up. President Finney then presented the trophy to the lecturer.

Harold then announced that the Adams Trophy which is awarded for the best technical article published in "A.R." from VK2 Antenna, was given by Dr. Gurtler, who, with the aid of sketches, made easy the theory of i.p. antenna, explaining the evolution of the type and ending up with a practical result. Dr. Gurtler then showed slides of a commercially made unit rotatable on a 100 ft. low price of a few hundred dollars, which has been used by Government services.

Many questions followed but resumption of the meeting ended an absorbing lecture well given.

The Federal Councillor then presented his report in which he stated that the forthcoming Federal Convention to be held in Sydney would be an historic occasion as the new Federal Company proposals would be presented and possibly accepted. Coupled with this would be the Region III. Meeting of the L.A.R.V. with delegates from the leading Amateur organisations of the world. Pierce 2APQ said that some sessions of these meetings would be open to visitors. His detailed report was duly accepted on motion by the meeting.

Pierce then advised that he was prepared to stand again as Federal Councillor, and was very rapidly nominated and seconded. Chairman Keith Finney then called for further nominations and there being none presented, called a vote, resulting in Pierce 2APQ being elected unopposed.

The Chairman then advised that the Council elections would be held at the April meeting due to the inability of the Division to operate during the mail strike. Keith requested members to read the bulletins carefully regarding nominations etc. The meeting was then closed and supper served.

CONVENTION DINNER

Some eighty members and friends enjoyed a memorable Dinner on Convention Saturday, 27th Jan. Held in attractive surroundings, with very good food and service, the dinner was well entertained under the very capable M.C., Bert Hay, 2AGW. The toast to the Queen was given by Dove 2BSJ, to the W.I.A. by President Keith 2KJ, and the toast to the visitors by Pierce 2APQ. The visitors were Mr. and Mrs. J. Striker, W6MOY; Mr. Roth Thomas, FK3AV, Col. and Mrs. Ballantine, VK2AAA, O.C. 8th Div. Sigs; Mr. and Mrs. Allan, Civil Defence. Mr. Stringer replied to the toast to the visitors on their behalf.

Mr. Striker turned out to be more than the usual guest, a musician of no mean accomplishment, he indulged in the trio playing piano and clarinet really hotting things up, so much so that it is understood that some will remember this event for a long time to come.

CONVENTION FIELD DAY

The Field Day was held at the Dural grounds in clear hot weather. An attendance of well over 200 had a good time, including the visitors W4SMZ/D4SZ/BVUUS, FKRAV, VK8ID, and VK4XV; Newcastle, Central Coast and Illawarra Branch members.

During the course of events a Floral Art Display was held for the ladies as well as novelty events. Children enjoyed pony rides and adults enjoyed plenty of soft and hard drinks, etc.

The usual display of commercial Ham gear was on to frustrate the OMs while the W.I.C.N. Committee provided a clinic for f.m. carphones. OMs complete with odd looking devices were often seen wandering about the bush or driving about in cars during fox hunts and the scrambles. The hot weather, however, kept quite a few under the shelter of trees and canvas.

The complete list of prize winners of the field events will be published in the Divisional Bulletin, however the main winners were as follows: 1st Prize: 2ZJF, 2ZVW, 2ZVW; 2nd Prize: 2AWZ; 144 Mc.: 2ZCF, 2ZVW, 2ZVW; 7 Mc.: 2AWZ; 144 Mc.: 2ZCF. Nail Driving: Mrs. Laws; Ball Game: Kay Laws; Nearest Pin: Mrs. Newland. Gate Prizes: Mrs. Laws, W.

SILENT KEYS

It is with deep regret that we record the passing of the following Amateurs:

VK20B—Lionel W. Mashman.
VK20E—William M. Allworth.
VK2ANU—Ken Mitchellhill.

Pollock. Distance Prizes: 61D, 4XY, 2Z2I (Dural). Y.R.S.: D. Fraser, S. Mudge, Rossie 2AKJ, Mrs. 2RU, 2ATT, C. Fairhall (Assess).

MEMBERSHIP CARDS—1968

Each member will be sent a Membership Card which will serve as a record of membership details. It is most important to return the correct half with payment. The card system introduced in this Division is an indication of the new system of information introduced in the office procedures recently re-arranged by the use of a full-time Secretary. In spite of extra expenses incurred, and increases in existing costs, Council has decided to hold the fee at \$5, but this can only be done if membership increases so remember the motto, "Every Member Wins a Member."

You are requested to check the card carefully, so that Bulletins and "A.R." are sent to the correct address and then time and money are not wasted trying to find you.

SUNDAY BROADCASTS

Due to burned out transformers the Broadcasts from VK2WI have been discontinued temporarily on 3595 Kc. and to enable call backs on 7050 Kc. the Broadcasts on 7145 Kc. has to be returned to 7050 at the end of the news. As can be appreciated this does not assist the duty operator and listeners should check at frequencies each Sunday to obtain the broadcast and call back frequencies. Installation of new transmitters will very shortly rectify this situation as well as provide the \$3.850 Kc. f.m. transmission.

URUGUA CONVENTION, EASTER WEEK-END

Members are reminded of the Uruguayan Convention to be held over Easter 1968. Being the 20th anniversary of this event, it promises to be an excellent way to spend Easter in idyllic conditions with very attractive prices for all events. Motel and hotel accommodation can be booked. See bulletin for details.

W.I.C.N. NEWS

As a continuance of W.I.C.N. policy to enable all Amateurs to have their f.m. gear periodically aligned to competent personnel, the following schedule of gear to be aligned during the Field Day at Dural. A total of 17 units were presented and 14 were suitably aligned. Lack of time prevented the completion of the project.

The Western Area Network based on Orange continues to expand with new stations operating from Orange, Dubbo, Egungra, Binyang, Gulgambone. A proof of coverage is to be held as an exercise on 23rd and 24th March. The exercise will be controlled by the Orange Radio Club's Base on Mt. Canobias, will encompass the Mitchell and parts of the Lachlan and Macquarie C.D. regions. Many operators will be invited to participate and those willing to assist should contact Brian 2ZQX (Sydney) or Kees 2ZKN (at Orange).

The new Operations Room of the Communications Centre at Aitchison St. is almost complete. Don Miller, 2GN, who headed up the installation team, has reported that for the design, modification and installation of this new showpiece. The room has been attractively decorated with white painted walls, acoustic tile ceiling and wall-to-wall carpet.

The large polished wooden operating desk comfortably seats h.f., v.h.f. and telephone operators, with a large exposure to the h.f. transmitter, AR88 Rk, all 6 and 2 m.x f.m. and a.m. channels, and land lines. Latest model headsets enable operators to be in simultaneous communication without any mutual interference. Following the erection of the proposed rooftop aerial farm, it is expected that an aerial Opening will be arranged. 23, Stan 2ZRD.

HUNTER BRANCH

Well I thought it had to happen eventually. Why even the I.T.U. has made recommendations about the use of the word 'modulator'. But to have come so quickly and without warning was almost more than one could imagine. Since we must take the physical outlook and tune our receivers a little sharper. Yes dear reader, Bill 2ZL has gone sideways. Of course everyone who knows about the matter is a bit perplexed but there it is, perfectly good ATS and modulator which has

While the big power men continue to pour on the coal, those with QRP are also busy but in a slightly different way. Stuart 2AYP has been on with the flea power rig and has had some excellent reports while even 2AWX has

The matter of lack of a broadcast receiver was briefly discussed and it was decided that the matter would be raised with the appropriate committee. Basically the trouble was the lack of news due to the postal strike. More important was the discussion on the accident to the

The proposed get-together camp out between the Bundaberg and our club could be some time in the near future, and the area chosen is near Gympie, so we could see a few Gympie club members there also we hope.

The new 2 mx net is progressing slowly. We now have two stations operating on the 2 mx band and we hope more will join them soon; both 20 and 2 mx are now used for the normal Monday night net.

By the time this is printed, we hope to have one of our old club members back from VK8 land. Bob 8JR has been in Darwin for some time, and is now on his way home. He is planning to leave, then possibly a VK2 call for Bob called in frequently on our Monday nets and kept up with club news. Another club member, Col 400, also left, and did not install the mobile in the new car.

Seems as if I have said enough for the month, more next month. T3, Warren 4GT.

BUNDBERG AMATEUR RADIO CLUB

When the club was first inaugurated we decided to spell off each Xmas-New Year period. We soon learned that the Xmas period ended up the busiest period of our year with the v.h.f. bands wide open and the influx of visiting Amateurs. Xmas 1967 really lived here, with a decided increase in the activity on 6 mx, both local and DX. There was also a big increase in the number of visitors.

State President Les 4XZ spent several weeks here in his home town and met many of the local chaps. Ex-club member, Murray 2XL, is here on a month's holiday. Murray was on our Jamboree net, and was very interested in taking part in Radar Technique as applied to Aircraft. George 4ZMG and Danny 4ZDD spent most of the month here, and they swelled the QRM on 6. Ken 4DQ spent several days here and was a welcome visitor to our Wednesday net.

Bill McIntyre, from the Satellite Tracking Station in Canberra, was quickly found and given a very hectic few weeks by the club members. Bill delivered a very interesting lecture on the subject of Satellite Tracking. Ex-club member, Bob 4ZRG, spent several weeks in town, and delivered a very interesting lecture on a few of the local spots. Other visitors over the holidays included John 4ZTD from Pinalia, and also Phillip 3ZZZ and Geoff 5ZNA. A number of people were touring over Queensland.

The 6 mx band has been pretty good for most of the Ross Hull Memorial Contest and local 6 mx activity is very high. Club member Bob 4ZRG, and his parents, the VKs with his parents. We had many contacts with Bob, both on 6 mx and 20 mc. Merv 4MZD holidayed at the club, and had a return to the club on the hood rack when he left, obviously to enjoy several weeks of both hanging five and the wonderful scenery that the Coast presents at this time of the year.

Frank 4UK caravaned to the South—fortunately, he got home before the rain. Roy 4ZWR spent a few weeks in the area, and was very active. Eventually got washed out as did our Club Treasurer, Jim Yarham. We hope the 30 inches of rain in the area will return his 2X to the enthusiasm for camping as we plan to have at least six field week-ends during '68.

The Xmas Party was most successful, in spite of the rain. The rain did not keep them out of the out-of-town visitors away.

Our congratulations to Geoff 4GL, Steve 4ZRG and Rex 4UD for the very good passes they obtained in the recent apprenticeship exams. Geoff and Steve are now both back in the club, and will further their studies in their particular fields.

A.O.C.P. and Y.R.S. classes will be resuming early in February and it looks as though the Club will have a return to the club with a lot of club extends to all Amateurs all the best for 1968. T3, Rusty 4JM.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division was held to a capacity attendance of members and visitors in view of the fact that the night was particularly warm, and had followed a day of nearly one hundred degrees in the shade. The attendance was very high, and what as a surprise, and it can only be assumed that the lecture for the night was the main reason for the large number.

The President, Murray 5ZQ, on holidays, the meeting was chaired by Geoff 5TY, the Vice-President, and opened practically with a little bit of a Federal or Federal or otherwise, was on hand and after the distribution of QSL cards by George 5RX and a short talk, the meeting was called to order for the lecture of the night.

This was in the joint hands of the President and Vice-President of the U.F.O. Investigation, Australia, Mr. Fred Stone and Mr. V. Godic, respectively, who both made it quite plain from the start that no attempt would be made to convince the meeting as to whether or not "Flying Saucers" to you were genuine or otherwise, no scientific explanations would be attempted, in fact whether the members present believe or not, whether they thought it just a joke, was a matter of no

concern to them, all they were going to do was to produce all the evidence on the subject at their command, and leave the rest to the common sense of the members.

Mr. Stone spent a little time on reading from literature on the subject, that he had brought along, all well known names from the space and science world, and after having heard them and just what they said, in support of unidentified flying objects, it would have been a brave member of the audience who would have taken his feet and dispute this part of the lecture.

Mr. Stone then handled the meeting over to Mr. Godic, whom I feel was a little more eloquent than mine, but he led us to believe, who then proceeded to substantiate the subject, with slides, more slides, and still more slides, all of which showed in some part of the picture undeniable evidence of flying saucers. There was no doubt about it, the visual evidence definitely backed up Mr. Stone, and was prepared in such a workmanlike manner by Mr. Godic, that again it would have been a brave member of the audience who would have dared to dispute this second section of the lecture.

The lights were then turned on and Mr. Stone and Mr. Godic stood back prepared for the barrage of questions from the members present. The members present were so apparently stunned by the brainwashing that not one question was forthcoming, and in the somewhat embarrassing silence which ensued, both gentlemen took a little measure at the obvious success of their lecture. Just think of it, the entire meeting completely stunned and silent, what greater success could they have asked for?

One member did recover enough to somewhat shakily ask as to what could be the best way to get a UFO, and he should come with a U.F.O. at some time or other, and received the obvious answer "run like the devil" but that did not stop him from attempting to save the situation, silence prevailed.

In all the years that I have been attending Divisional meetings, I have never seen such an effect as this one, and I have never seen an audience so bereft of words at its conclusion. All of which says a volume of the brainwashing and also for the craftsmanship displayed in presenting it. I don't know just what those present thought about the subject of flying saucers. I don't know whether they were impressed or whether their complete silence at question time was purely due to good manners, but this will hazard a guess that the subject of flying saucers, imprinted on the minds of all present, and will remain so for some time which must have satisfied both lecturers immensely, and also been the cause of not a little secret amusement on the part.

The vote of thanks to the lecturers was ably delivered by Bob 5DZX and the applause that followed must have been as music to their ears.

Among the very welcome visitors at the meeting were Rex 5HO from Kimba, Peter 5APJ (who was staying with Uncle Joe, 5UJ, and his harmonic. Uncle Joe insisted as being classed as a visitor, but the extent to which he was up at the meetings is fast making Port Pirie look like an outer suburb of Adelaide!

Heard Bill 5FR portable at Bright, in VK3, winding up the engine, and driving to Melbourne, on 7 Mc. Both signals much stronger than from their usual locations to me, and I gathered that Wyk was on his last day at Hillview, while Bill seemed to be just settling in.

Gilbert 5GX, he of disposal fame, is at the Hillview, while Bill seemed to be just settling in, and a "crooked" knee, both of which are improving.

Keith 5KH, my facurite banker, became very cheerful the other day, whilst in mobile, in describing his exact location. He became very descriptive, as he said, "I am at the moment in the Desert, near the Mitchell, and qualified it by adding "The Mitcham cemetery." How exact can they get?

However, Brian 5CA went the reverse with his description to some expected visitors by saying "Look out for a dirty two-toned grey Holden, with a big black dog in the back." Did not hear him give the name, but he did the number on the dog's registration disc, so hope the visitors were able to find him to allow him to take his dog home.

Les 5NJL on the day of the motor racing at Melbana was heard en route mobile. Your guess is as good as mine, but I gathered that he would have been on a passing interest in the sport at one time.

Max 5GF heard saying that he was going away for a few days over the Xmas-New Year period, but was not taking the mobile. This shock to the system, as he usually well to the fore mobile on such occasions.

Geoff 5TY had a pleasing result after his year's studies, the paper showed his name on top with "credit" with the form, his XYL Christine also kept the flag flying with a pass in maths, at the Flinders University. Quite a cultural family, if I might say so.

Heard Jack 3LN mobile on 7 Mc. the other early evening, and from his conversation I gathered that he was just returning from an annual trip to the States, and was putting in a powerful signal to me, but when he gave his location I soon woke up. He was only about two or three streets away from me.

The other half of the QSO, Athol 5LQ—how did you guess—seemed to be somewhat hysterical, and was saying that he had been away a week day, but finally broke down and confessed that he would not have minded if he could be swapped places with him for the afternoon.

My morale was considerably shaken the other day when I heard Wyk 5WK in contact on 14 Mc. with V83 against him. The reason for the shaken morale was that he was on s.b.s., using a Swan, I think, and he was the station in VK3 which thought would have given me allegiance to the bitter end. He was certainly putting out an effective quantity.

Listening to Nobby 5WK and Huk 5J3 in QSO on 14 Mc. recently, I could not help but let my memory wander back as to just when I had last heard Nobby, and I think my memory up at thirty years, it was becoming too nostalgic, but came to the conclusion that I had last heard Nobby when he was in Kent Town, and Nobby was on top of the Liberal Club building. What a QTH for Nobby, DX-wise. I never stop telling people as to how much I miss him, and I miss him from that address.

Had a very short visit from Ted 2ACD over the top of the Peak, and I think we both catch me in a couple of occasions, and just managed to bump into me as I was leaving the work. Nobby was saying, "Naturally, I don't work, many words, but I miss you, XYL to hold the fort for me. I remembered later that he is mates with Jim 5FO and XYL Rae, but I won't hold that against him!

Our Federal Councillor, Geoff 5TY, is claiming that he has lost a stone in weight, and advances the proof that when he was on top of the hill, he was carrying a stone in his aerial, his strides gently fell to his ankles, much to his mental and physical state of mind. I don't know if he is right, or if he is wrong, but I find no proof for the loss of weight. I do find that the residents of Fairmont Street are in the process of forming a Puritan League, and all club members are warned to stay away from that street.

I may or may not have mentioned it, but Rex 5DO recently changed his car over for another one, and believe it or not the first time he was in the car was at the first meeting of the REX. At the rate the letters are moving along, by the time I am ready to get my new car, I will have a lot of letters to write. I will be writing letters of SSB in my number plate. What a horrible and frightening thought.

Eventually heard from Jack 5LR and pleased to hear that he had settled in at Victor Harbour, and feels like he has lived there for years. No report on any activity on the part of the South Australian Division.

Received a letter from Bert 5EQ with a couple of news items concerning Youth Radio activities in the State, and in a few weeks column. Bert is certainly pulling his weight for Y.R.S., and is doing a job of pulling his weight for the club. Thanks for the news items Bert, they come in handy any time.

Plenty of interstate visitors in and out of our fair city over the Xmas and New Year break. Mobilising was in a very high gear, and reached a new high, and many new friendships were formed and visits paid. This is all to the good, as there is no better way to advance our club than on a "swab" QSO.

Bob 5OD, the Co-ordinator for Y.R.S. in VK5, has agreed to represent our Division at the 60th Convention of the Y.R.S. to be held over the week-end of June 1 and 2. This is



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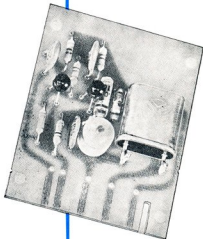
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